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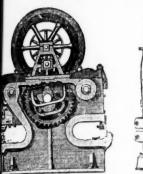
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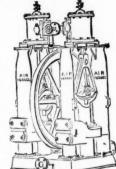
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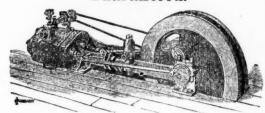
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Into prontable use, which would otherwise remain dormain.

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 20th March, 1876, says --"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

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GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—" The paration which they make is complete."

paration when they make is complete.

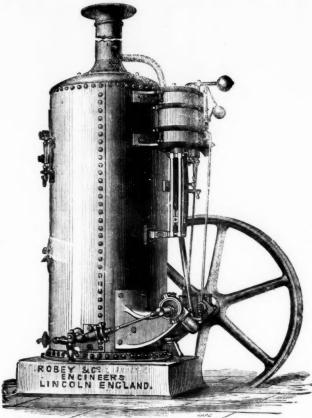
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Drawings, specifications, and estimates will be forwarded on application to-GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES

Dated 16th December, 1873. Dated 17th December, 1873. Patent No. 4136 Patent No. 4150

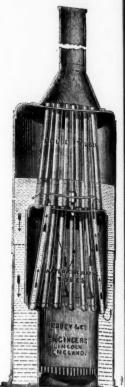
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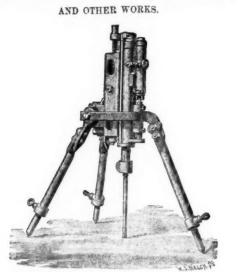


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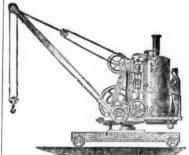
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Original Correspondence.

MINING IN COLORADO-SOUTH PARK-No. II.

MINING IN COLORADO—SOUTH PARK—NO. II.

Sin,—In consecutive order, we now take the cretaceous system. The stratified beds are conformable with those of the eocene last described, but as they advance toward the mountains are somewhat described, but as they advance toward the mountains are somewhat described, but as they advance toward the mountains are somewhat described in their inclination. There does not appear to have been supported in their inclination. There does not appear to have been supported in their factorial influence ever at work along the hills covered by this formation except that common to subsidence, which merely by this formation except that common to subsidence, which merely by this formation except that common to subsidence, which merely by this formation except that common to subsidence, which merely proposed to the case of the control of the c occurs on the eastern since of the transport and that an additional Jefferson counties; but there heavy displacements have occurred, litting the strata up to a vertical position, and, in some instances, reversing their normal bed planes. Their lithology is simple, conversing their normal bed planes. Their lithology is simple, conversing merely of argillaceous limes, grey sandstone, calcareous shales, thin seams of gault, white grits, alumatone or sulphate or alumins, with a few beds of soft bituminous earths. I have found slumins, with a few beds of soft bituminous earths. I have found slumins, with a few beds of soft bituminous earths. I have found speriode and springs—near which are deposits of rich carnot early strong soda springs—near which are deposits of rich carnot early strong soda springs—near which are deposits of rich carnot early strong soda springs—near which are deposits of rich carnot early strong soda springs—near which are the testacea, consisting of ostrea, gryphea, cyprina, rhynconella, pectens, terebratala, and thracia—univalves are quite rare; but the most abundant of all the molusca is the mylitus, or common mussel, which are delarge size. I have found some 6 in. in length, showing they lived cossisting of ostrea, grypnea, cyprina, hybrosham, petens, tereinstula, and thracia—univalves are quite rare; but the most abundant of all the molusca is the mylitus, or common mussel, which are dant of all the molusca is the mylitus, or common mussel, which are dant of all the molusca is the mylitus, or common mussel, which are dant of all the molusca is the mylitus, or common mussel, which are dant of large size. I have found some 6 in. in length, showing they lived of large size. I have found some 6 in. in length, showing they lived either in fresh or brackish water. Where I find these they are in a quarty, the stone of which is burned, and produces a beautiful white some comminuted particles of carbonaceous matter in the dark-blue some comminuted particles of carbonaceous matter in the dark-blue some comminuted particles of carbonaceous matter in the dark-blue some comminuted particles of carbonaceous matter in the dark-blue some deep red clay stones: there are some limes and marks. It is of great hickness. In one escarpment of the mountains, where it can be very distinctly examined, I estimated it to be nearly 4000 ft. in thickness. It is the new red sandstone of the Rocky Mountains, and estends unbroken for hundreds of miles. I never found any minerals of value in it other than iron, which is chiefly hematite. I am of opinion it is in the lower beds of this formation where the salt deposits lie, for I have never found any saline springs in the systems below it, although sulphur and sods springs are numerous. It contains beds of beautiful freestone, which for building purposes cannot be surpassed, also a nearly white fine grit dolomite, called sometimes Colorado marble. There are also beds of red-banded silicious lime, which is admissable of a high polish, and is very handsome. It would make a superb mosaic pavement for corridor and hall floors. There is a great puncity of organic remains in all these rocks—all are highly ferruginous. The oolite stratum is thin; its grains are very fine, and not readily di width at the surface. Occasionally we find it in parallel ridges. This formation may be called the commencement of the rich metalbearing rocks. Its structure is partially stratiform, although, as viewed from a distance, the large masses on great elevations appear to be amphorous. The cleavage planes have all a north-east tendency. It consists of quartzites in almost every known variety—from the coarsest cystalline to the finest grits—and of every shade and colour. Those that are most siliceous are the uppermost. Then follows a drity brown, closely laminated greiss, in which are lumps and veins of opaque or milky quartz. Between these two latter classes of rocks, and partially in both, are lodes of copper. The ore is chiefly a carbonate, and exceedingly rich. I have some specimens that assay 65 per cent. of copper and 40 ozs. of silver. The main lodes are generally outcropped with a strong gossan, which runs from ½ oz. to 3 ozs. of gold. The gangue is chiefly granular quartz, alumina, and some calcareous flookan, heavily impregnated with sulphuret of iron. Layers of reddish brown concretionary granites appear: they have intervening beds of schistose rock. Although these are foliaform in structure they are not slates.

There are no clay-slates in these mountains; at least I have never found any yet in my five years' explorations. The granites are very friable: they are much decomposed at surface by the atmosphere, causing the hill-tops to be rounded off in mound-like shapes, and the slopes presenting fair even inclines. These are covered with a fine stunted grass, producing rich herbage, on which the elk deer and mountain sheep principally exist. In this rock are veins of gold, or rather veins of ferruginous matter carrying gold. It is by their natural decomposition the placer mines or diggings in the valleys below are supplied with their practious metals. This gold, however, does not all emanate from the lodes and veins, although they are in all probability the largest contributors, for we find where they cross

the valleys in their immediate vicinity are the most prolific gravel beds. All the rock is more or less diffused with gold in chemical combination: it lies in the pyrites. The disintegration constantly ceas. All the rock is more or less diffused with gold in chemical combination: it lies in the pyrites. The disintegration constantly going on by climatic changes decomposes them, and thus sets the gold free. This subsequently finds its way down into the gulches, where, if allowed time to rest by molecular action, it takes the form of grains, and becomes the gold dust of the miner. These secondary granites contain but little mica, and what there is of it is in finely comminuted scales; but in some of the quartzose variety, where they are very coarse, plates of mica are frequently found quite large, I have some 7 in. long by 5 in. wide, and so extremely attenuated in their lamine that they can be readily split out 1000 to the inch; generally, however, this valuable substance does not exceed more than from 2 in. to 4 in. in length. Below this comes a series of sandstones, so called: they consist of an agglutination of angular particles of the older rocks. They have evidently never been subjected to attrition, or only to a very slight degree; the cementing medium is silex. They are really quartzites, and not sandstones proper. The remainder of this group are considerably mixed, and for which lave no name; but in them are veins carrying gold, copper, silver, lead, bismuth, nickel, and manganese. Some of the copper specimens that are irridisent when in a cluster of pellucid rock crystals are very beautiful. Nearly all these ores are rich in their respective metals, and very abundant. Magnetite, a black oxide of iron, is freely interspersed through nearly all these rocks; and from my observations I find where this mineral is strongly prominent, and felapar enters largely into the composition of the rock, the veins passing through them are usually rich in the precious metals. It is seeparate surgery into the composition of the rock, the vehicles seems that the mare usually rich in the precious metals. It is somewhat difficult to ascertain the exact thickness of this Devonian formation; it can only be approximated. By a close examination of the detritus along the mountain side a locasis of the divisional line may be founded, but this is consequently independent of the detritus along the mountain side a locasis of the divisional line may be founded, but this is consequently independent. gely into the composition of the rock, the veins of the detritus along the mountain side a locasis of the divisional line may be founded; but this is somewhat indefinite unless the search is made at right angles with the selvages of the several strata, which can be done only where they run in courses parallel with the valleys. The debris in the bottoms is mixed with erratic stones and boulders that have come away from places far up in the mountain range. Some of them have been transported by fluvial others by glacial action. In the latter case it is evident in the moraines, which are common in the upper parts of the gorges, which are abrupt and rise steeply; it is, therefore, only by taking averages of the stones in what is here called the "float" that we can approximate a line of demarcation.

a line of demarcation.

The Silurian, Upper and Lower.—This system is distinguished and crystalline condiable from the more advanced metamorphic and crystalline condi-tion of its rocks, and not from any organic vestiges to sanction its being called by this name, for they are apparently azoic. We might have it the pre-meridian or scalent, after Prof. Rogers; but such would not be conseally understood although an admirable arrange. would not be generally understood, although an admirable arrange-

ment of classification. I have, therefore, adopted the usual European nomenclature, as adduced from the common knowledge of consecutive systems. The upper series consist of blue, grey, green, and purple gneiss, concretionary granites, quartzites, and embedded quartz veins: they are all copper and silver bearing. The lodes are strong, and many carry a gossan on the backs, which is rich in gold; but they are all silver lodes in depth—they contain very little felspar. These are visible at the head waters of the River Platte, and are very distinct from the rocks of the Devonian, just described. The lower series, which form the central part of the snowy range, is of anterior age: its rocks are chiefly gneissic, but more indurated, of closer texture, and crystalline, yet differing little in their specific gravities. They are traversed with veins and dykes of injected granite, porphyry, trachyte, greenstone, basaltic trap, and specific gravities. They are traversed with veins and dykes of injected granite, porphyry, trachyte, greenstone, basaltic trap, and epidote. There are abnormal masses of syenite, diorite, and horn-blendic gneiss, with beds of vitreous whinstone. Where uniform the bed-planes of the stratum dip at an angle of 75°. The cleavages are north-east, with right-angled heading joints: all are silver bearing. They constitute the entire lower rocks of the range. Whether they repose on the Cambrian or other older formations I have not a vet secretained. They constain no remittive greating they repose on the Camorian or other older formations I have not as yet ascertained. They certainly contain no primitive granites other than those of a purely igneous character; therefore, we may suppose there is yet an intervening system. The surface exposures from whence I have made the foregoing examinations is 14,250 ft.

My next will conclude the geology of this end of the Park, with a description of the limestone deposits of Mont Bross and the celebrated Moose Mine, which has given such notoriety to this district.

CHARLES S. RICHARDSON, G.M.E.

Alma Smelting Works, Park County, Colorado, June 1.

THE LOWER URAL COUNTRY, AND RAILWAYS.

THE LOWER URAL COUNTRY, AND RAILWAYS.

SIR,—We are in the very heat of the early railway days here, and unless the Turkish Question leads to war, or uncommonly adverse financial difficulties otherwise supervene, of which, notwithstanding the rather uncomfortable signs lately or the Exchange, people in Russia do not seem to be greatly apprehensive, we shall see the steam-horse coursing in all directions over these monotonous expanses of prairie, and along the green slope of the Urals, and the curse of distance will be mitigated. It is regarded as almost certain that this summer already the Samara-Orenburg Railway will be opened, and almost simultaneously with the opening of that road operations will commence for the prolongation of the same line to the great salt mines of Ilebsk—70 versts beyond the Ural river and Orenburg in the Kirghis steppes. The engineers of the company constructing this line have made a preliminary survey of a line also from Orenburg to the Bielaia river, by which, with about 150 versts of road, Orenburg and the steppe country beyond will be placed in communication with the great water-system of the Volga, and what is not less important, with the wood supplies from the forest land on the Bielaia basin. But probably this branch derives still more importance from the fact that it is looked upon as the first instalment of a line along the western slope of the Ural to Perm, where it would join the great Siberian line. As far as the Bielaia the nature of the ground is easy. It is true there is a long lateral chain of hills to be traversed some 40 miles before reaching the Bielaia, but with a curve or two, which the ground renders easy, this offers no difficulty, nor, indeed, will it entail any very considerable increase of expense. From the Bielaia onwards to Perm, however, the engineer has quite another description of surface to deal with. He has hills and endless mountain gorges to pass over; still, even here nothing occurs worthy being called engineering difficulty. It is country not more di

The event which commands most attention in railway matters in this part of the empire, however, is the great line to Southern Siberia and Central Asia. After long debate the Central Govern-ment seems to have declared definitely in favour of the line by ment seems to have declared definitely in favour of the line by Viatka, Perm, Ekaterinburg, and Troitsk, as opposed to the rival project of a line via Orenburg. What will form a portion of this line between Perm and Ekaterinburg is (already two years since) in construction, and the latest intelligence seems to point to a commencement this summer throughout its entire extent. Orenburg, as has been proved again and again of late years, vindicates her right of pre-eminence to the title of "Porte de l'Asie." This city is unquestionably the best basis of operations in Central Asia, as much in a military as an administrative and commercial sense. It is from here that the dispatch of troops and supply of military material have been found both in summer and winter to be attended is from here that the dispatch of troops and supply of military material have been found both in summer and winter to be attended with the least difficulty. Orenburg resembles in rapidity of growth more, it may be, than any other town in the Czar's dominions the cities of the great Republic of the West. The question which now most nearly affects Orenburg, and the Central Government with respect to Orenburg, is how that city is to be placed in connection with this question that during the present winter Gen. Beznosikoff, the chief of the commission for these railways, visited Orenburg, and reconnotived the ground for a line across the extreme scuthern point of the Urals, from Orenburg towards Troitsk, It is said that the General has concluded favourably with respect to the line.

Recapitulating, here then is the position of the railways in this part to date:—The Volga-Orenburg line will be opened to traffic this year; contractors at work (two years since) between Perm and Ekaterinburg, making the first portion of the great line to Central Asia; operations about to be commenced from Orenburg to Iletsk; and the Ministry of Public Works and contractors busy with new projects for the lines Perm-Orenburg and Orenburg-Troitsk. It is terial have been found both in summer and winter to be attended

Asia; operations about to be commenced from Orenburg to Iletek; and the Ministry of Public Works and contractors busy with new projects for the lines Perm-Orenburg and Orenburg-Troitsk. It is not necessary to seek the cause of all this railway activity in political motives, although so far as Central Asia is concerned such motives are unquestionably the prime movers. The natural resources of this sub-Uralian country in soil and minerals are so great that, supposing the territory were in Canada, or the United States, or, perhaps, even in India, no political considerations would be needed as inducements to bring it into communication with the general railway system. Lines would long ago have been made across and along this rich country, and every acre of land would have been bought up at prices tenfold that at which it now changes hands. By-the-by, perhaps nowhere does there offer a better employment for capital than the purchase of land along these new lines of railway, and on the western slope of the Urals. Who can doubt that what has taken place on the other side of the Volga as the result of the opening of railways will, within the next few years, repet itself in the country through which these lines are traced? The land is not worse but decidedly better than on the European side of the Volga, and to my certain knowledge the price of land there rose immediately six times in value, and here it will also rise from the 3 roubles to 4 roubles, its present value, to perhaps ten times that value. Evidence is not wanting that Russian capitalists are sufficiently aware of this coming change. They are beginning to buy up land, in many cases the buyer coming from the old Governments of the Empire. In fact, considering the little capital in the country in proportion to the greatness of the demands upon it, this ments of the Empire. In fact, considering the little capital in the country in proportion to the greatness of the demands upon it, this land purchase goes on with considerable activity. It is significant when one finds that the Orenburg and Ufa merchants, who only a little while ago exhibited the greatest indifference about land, are now buying everywhere to the full extent of their means. In fact, so great is this mania for land buying that it is the theme in every

so great is this mania for land buying that it is the theme in every posthouse and on every steamboat, and one can hardly be respectable among them without having the title to an estate in his pocket!

The impending changes will hardly bring more good to anyone than to the Russia Copper Company. This association of English capitalists some years ago purchased, besides the two finest landed and mineral estates in the lower Ural country, mineral rights over an extent of territory equal to a couple of the largest German duchies. Their freehold possessions cover nearly half-a-million of English acres of land. Both the lines Perm-Orenburg and the Orenburg-Troitsk will pass close by, if not through, the vast landed estates of this company, and the line about to be opened from Samara to Orenburg passes within 14 miles of one of their minor estates and their principal mines.

Perhaps hardly a better illustration could be given of the benefit

resulting from these railways than in connection with such possessions as those of the Russia Copper Company. It will tell in its beneficial results—first, by bringing about the means of taking the products to market, for whereas the copper, corn, and other products have to be allowed to accumulate during the greater part of the year, they will by-and-by be realisable at the great markets as they are produced, and the capital, which before necessarily went into stocks, will by so much be set free for current purposes. What takes place as to transport, although perhaps it will be quicker felt than any other effect, is, nevertheless, not more important than the increase of labour from immigration, for it is well known that it is on the score of insufficient labour more than any other that the Russia Copper Company, in common with all other enterprises in this part of Russia, has been straitened and encountered drawbacks. Immigration has long since set in, but, compared with the require-

this part of Russia, has been straitened and encountered drawbucks. Immigration has long since set in, but, compared with the requirements of the country, it is slow. What is wanted is the acceleration of it, which will naturally be the effect of better travelling communication and the enhanced value of the products of the soil. What I mean by enhanced value of products of the soil will be better explained when I say that, whereas there has been the cry of famine in the more southern governments of Poldolia and Veronej, and that while here hundreds of thousands—nay, millions—of acres of hay perish annually in the fields (no one to save it), nearly all the cattle in the southern provinces have either perished or been sold off at a third of their value for want of straw or hay to winter them; rye this winter has been selling in this part of the country them; rye this winter has been selling in this part of the country at 1s. a bushel (25 kopeks a pood), and wheat at 1s. 10d. a bushel

(40 kopeks a pood).

It is devoutly to be wished that with the railways there will be the advent of remedy in some way or other of the huge evils of bal police and local administration, for certain it is that without such improvements neither the railway nor anything else that will come improvements neither the railway nor anything else that will come with it can result in anything but disappointment. The evils of which I complain may be seen in any public paper, and are the everlasting theme of complaint of all intelligent men, and of all Government officials as well in the highest as the lowest grades of office. The abuses of the district police in particular are the incubus of the country, and eat at the vitals of everything like confidence where business of any magnitude beyond that of a pedlar is concerned. Putting aside all minor grounds of complainnt, what hope can there be of order or justice when a chief of the district police is allowed to treat with recklessness and contempt both law and higher administration; and when workmen of whole communes are allowed to disregard with impunity the obligations of contracts are allowed to disregard with impunity the obligations of contracts of unquestionable clearness and legality, and upon the signature of which they have received large sums of advances, sometimes to the extent of one-third or one-half of the value of the work contracted for, by which to pay the Government taxes? There is, perhaps, no-country whose laws keep a more jealous watch against all disturbances among workmen, such as strikes, &c., and yet there are cases of the most aggravated kind where the police of the district, whose duty it is to maintain order, have acted in reckless disregard of such laws from mere wanton abuse of authority, or from prejudice, or some not more worthy motive.

some not more worthy motive.

Every friend of progress in Russia will rejoice if pessimists—as it seems they will be—are to be disappointed in their predictions of what they call the inevitable financial crash in railways, after the examples of things in the West. Did not this mistake in their estimates of Russian railways arise from not allowing sufficient play to the exceptional effect on the capital of the country produced play to the exceptional effect on the capital of the country produced by railway communication? And such a mistake was, perhaps, natural enough to people who left out of sight the difference there is in the use of railways in countries where the products of the manufacture are taken warm from the workmen's hands, when compared with Russia, where for the most part money absorbed in one year's manufacture was, before the time of the railways, not returned until the outlay for a second year's production had been incurred. It is not too much to say of railways in Russia that not only do they, after the American fashion, make the country by bringing totally new conditions of commercial activity to the distant provinces, but they double or triple the productive power of existing capital, and in no part of Russia does this apply more than to the province of Orenburg. The gratitude of the country is due to the Governor-General of Orenburg for the energy and sagacity with which, notwithstanding great discouragement, he has persevered in recommending and pushing the scheme for these great works.

recommending and pushing the scheme for these great works.

It may not be out of place to add, in connection with railways inthis part of Russia, that those who are experienced with the great water system of the Volga aver that there is almost year by year a sensible decrease of depth of water, as the result of the destruction of the forests in the country by which it is fed. So decided is this decrease in the last few years that it is predicted that the time is not far distant when Nijni fair must be removed to some place further down the stream. GEORGE RICKARD.

Orenburg, June 29.

IRONMAKING IN SOUTH WALES.

SIB.—The iron trade of South Wales is at present depressed and unsatisfactory; indeed, seeing the insolvent state of some of the joint-stock establishments making iron one might almost fear that ironmaking in South Wales will soon become a thing of the past. This has created lamentable disturbing causes, tending to widen the breach between labour and capital. It is evident from the published estaments of returns or capital invested in this branch of trade that This has created lamentable disturbing causes, tending to widen the breach between labour and capital. It is evident from the published statements of returns on capital invested in this branch of trade that many of the ironmaking firms have long been in a critical condition, so that the slightest agitation either in the labour or commercial market led to suspension. We have been repeatedly told that these disturbing causes were fast sending our own trade to foreign lands, and that unless the working class submitted to the employers' terms the latter could not compete with foreign nations. This is no doubt true, but there have been other disturbing causes even more destructive than any combination of labour—the production of rotten and unmall ablising pig-iron. Cheapness is no doubt desirable, but it is useless to consider cheapness alone, and to neglect quality. Notwithstanding the apparent cheapness with which iron has been groudeed by the hot-blast from coarse and unsuitable raw material, much harm has been done by the book wisdom introduced into ironmaking, bewildering and confusing us operatives until nearly all the old modes of treating pig iron have disappeared, the worst feature of all being that the conditions sought to be substituted for those formerly recognised being ill chosen and unreliable, and it would be a matter for congratulation if some practical method of alloying should be discovered which would compensate for the irregularities of the pig-iron, and permit of a reliable article being obtained suitable for special sections of metal of good marketable quality. But the fact seems to be that much of this worthless produce are of such a character that chemistry alone could determine its constituent parts, and suggest its further treatment. It is this material that has been used by both master and man for the practice of a vast amount of trickery, such as the complaints of extra waste, large amount of physical toil that is necessary to make it of commercial value, and that a truly astonishing dmo

refliciently aware of this coming change. They are beginning to uy up land, in many cases the buyer coming from the old Governments of the Empire. In fact, considering the little capital in the outry in proportion to the greatness of the demands upon it, this and purchase goes on with considerable activity. It is significant when one finds that the Orenburg and Ufa merchants, who only a title while ago exhibited the greatest indifference about land, are low buying everywhere to the full extent of their means. In fact, or great is this mania for land buying that it is the theme in every bosthouse and on every steamboat, and one can hardly be respectible among them without having the title to an estate in his pocket!

The imp-nding changes will hardly bring more good to anyone apitalists some years ago purchased, besides the two finest landed and mineral estates in the lower Ural country, mineral rights over an extent of territory equal to a couple of the largest German and their principal mines.

Their freehold possessions cover nearly half-a-million of South Wales of land. Both the lines Perm-Orenburg and the Orenburg passes within 14 miles of one of their minor states and their principal mines.

Perhaps hardly a better illustration could be given of the benefit

ome of the acquirements, foresight, and acuteness of the great originals who issueered themselves and those dependent upon their logical guidance over so namy obstacles, both physical and pecuniary, fromaking would at the present time have been upon a more substantial basis. The produce of these fathers of the trade could be considerably relied upon, and from the sase and certainty with which their iron could be maileablised to any required fibre to correspond with my demand in commerce or mechanism, although sometimes containing the ighest percentage of carbon, which caused it to melt as thin as quicksilver, it holds be as expectitionally oxidised as refiners' metal, and the operative was never riven to his wits' end to know how he could accomplish his task. All that he red him. How strangely do those things contrast with many of the doings in on-making at the present day. Pig-iron produced by the improved (?) method of ob-blast has hitherto defied the most initiated and learned to define its elements ad alloys; nor, indeed, are we yet at the end of our complaints. Respecting how at trade is rapidly slipping out of our hands, there seems in the alloying of the greparatory to its being maileablined a manifest departure from the original masistency of those whose names I have already mentioned. This is now left to me uneducated rule-of-thumb man, who comprehends quite as much respecting to elementary parts he bundles together as those who directed the fusion of the is a matter of sincere regret to all intelligent operatives to see such a vastamount capital lost on iron manufacture that it is fast becoming a by-word and a reach with capitalists of the present day, from which much misery and destitum must necessarily follow to those who have to live by their labour.

NEW ST. AGNES MINING COMPANY.

NEW ST. AGNES MINING COMPANY.

SIR,—At the close of my letter addressed to your useful paper last week respecting my connection with the above-named company, and in reference to your leading article on the subject the previous week, I expressed the intention, with your kind permission, to write one other letter elucidating the position and prospects of the property, which I believe is one of the finest stanniferous estates in Cornwall. The mine is not simply one of tin, it is as so many tin mines in Cornwall are, also cupriferous, and shows a remunerative quantity of sulphur mundic. The history of the mine, and of the former and of sulphur mundic. The history of the mine, and or the former and the present companies, has been given, partly in my letter of last week, and partly in your leader of the week before, and need not be referred to now farther than to say that every shareholder in the old company (the St. Agnes Consols) has been invited to join the New St. Agnes. Before noticing in detail the situation and extent of the property, the quality and character of the produce, and the geological peculiarities of the locality, I think I may safely urge upon your readers that this is a good time to invest in progressive mines yieldreaders that this is a good time to invest in progressive mines yielding the superior metals. It is so absolutely and comparatively. Compared with iron—tin, copper, and lead mines offer far better prospects. The iron trade is decressed, high wages, strikes, foreign competition, the commercial difficulties of many of our best foreign customers, actively militate with the prosperity of iron mining. There is, besides these, a disadvantage now severely felt but not generally noticed that during the recent abnormal prices in the iron trade a large amount of carital was fixed in mines and furness. trade a large amount of capital was fixed in mines and furnaces which cannot now be released; in some instances it is impossible to dispose of the works at all, and in many cases, except at a loss more or less oppressive. In fact it is alleged that generally there is not left sufficient working capital.

Coal mining is not just now extensively profitable. The late "coal

"raised prices so enormously that pits were sunk in every n to secure them, so that the competition among coalowners e and depressing. But the superior products of our mines famine direction to sec is severe and depressing. But the superior products of our mines have, on the whole, good markets, and the demand is not receding. Prices move up and down with the action of speculative buyers, which just lately has been extremely quiet; but no speculations will increase the amount actually consumed, although a factitious will increase the amount actually consumed, although a factitious rise in values produced by speculators may for a time lessen consumption. Lead and spelter have advanced well, and the tin and copper markets, even when lately somewhat depressed, have not been discouraging. Tin stocks are tolerably heavy, and foreign consignments are expected this month, but the least reaction in general commerce, or the assured success of peaceful diplomacy in the East, would empty warehouses and carry off the arrivals. The apprehensions expressed as to the over supplies from Australia have not been sions expressed as to the over supplies from Australia have not been confirmed by facts. The Great Eastern Archipelago has supplied, and will supply, a great deal. But the mines there, the produce of and will supply, a great deal. But the mines there, the produce of which has been found in layers near the surface, are growing deeper, and deep mines in the Straits cannot compete with our English mines; for, so far, scarcely any machinery has been applied, or can be applied cheaply; the works are carried on in a most primitive fashion by manual labour. Now and then a water-wheel or a treadmill is at work. The ore is imperfectly and rudely smelted, and the quality is inferior to the product of the Cornish mines; in this country the former is of little use without the latter. If British machinery he imported the rude labourer would trike, as he sheen machinery be imported the rude labourers would strike, as has been the case in some instances, and at best it would be unsatisfactorily worked. Unless the yield of Straits tin costs less, or brings a better price, it is likely that its production will decline.

Copper is subject to the same general market comments as tin, but it is more plentiful in the world, and its quality, as compared with our own, is frequently better. Besides it is well for your

with our own, is frequently better. Besides, it is well for your readers to understand, or understanding to keep in mind, that when prices are high for metals, or for mining shares on the Stock Exchange, it is not always advantageous to buy. When prices for metals run up premiums for shares go up with them, and the eager investor obtains his shares at a cost of purchase which leaves him a a very moderate percentage if values maintain their elevation, or even for a time continue to rise; and in the long wan the reaction. even for a time continue to rise; and in the long run the reaction customary in all departments of business ensues, and the investor who bought in at elevated quotations suffers a serious loss. It is wise to buy in when prices are tolerably low, especially after a protracted period of depression, when the signs of the times are favourable, and stocks of metals at home and abroad are low, or at all events moderate. Quotations on the Stock Exchage are only guides to speculators—to the bona fide investor it is of no consequence how the "bulls" toss up on their horns the prices of shares in Capel-court, or how low the "bears" may bear them down the intrinsic value of the mines thus made subservient to gambling are really unaltered one way or the other. It does not follow that the cheapest offer in the unining market is at any time the best. The capitalist with moderate means especially should consult an expecat with moderate means especially should consult an expe rienced broker or dealer, who will examine the property itself, and give competent advice. At the present juncture there is no better or give competent advice. At the present juncture there is no better or safer investment than a sound progressive English tin, lead, or cop is on the way to a dividend. and is a thoroughly proved mine. Such is New St. Agnes Tin Mine (virtually tin and

owever good a mine may be, it is of consequence that what is taken to the surface can be carried away with cheapness and facility to a good market. New St. Agnes is in this respect most favourably situated. It is near the Scorrier station of the West Cornwall Railway, and almost within sight of the sea. The stuff can be borne at low rates to Swansea, Newport, Bristol, and Liverpool. The country is situated in one of the most (perhaps the most) prolific mining district. is situated in one of the most (perhaps the most) prolific mining districts in England, and is bounded on every side by proved metalliferous properties, the same lodes passing through St. Agnes which pass through most of them, especially a very rich lode which runs through Wheal Kitty. The deposits extend through St. Agnes, and are fully ½ mile in length, embedded in rich and well defined stanniferous strata. The geology of the district is well known to scientific men as indicating the presence of both tin and copper, and well known to mining captains, working miners, and the inhabitants of Cornwall generally as rich in tin. The directors themselves have examined the property with searching scrutiny, and the engineers and mining captains whom they employed to investigate it have all testified that it is a great mine, and will speedily be dividend-paying. It should be remembered that the vendors have taken payment in shares, so the capital now raised and being raised will be all available for working the concern.

As regards the efficiency of the skill and labour applied, one of

As regards the efficiency of the skill and labour applied, one of the ablest mine inspectors in Cornwall says—"Reynolds's engine-shaft is sunk vertically to the depth of 84 fms. below the deep adit smate is sunk vertically to the depth of St Ims. below the deen and level, and at this point a cross-cut is being driven to inter-ect Wheal Kitty and other lodes in that direction. At the 72 fm. level a fine masterly lode has been cut, and opened on about 25 fms. The lode has varied in size from 2 to 3 ft. in width, and has been worth 201. per fathom for tin and 2 tons of copper ore per fathom. The out-

lay already made has supplied ample machinery, which is capable of sinking the mine to any required depth." Two other well known mining engineers have after inspection addressed the directors in these words—"You have a first-class mining property; the lode you now have when developed will, in our opinion, give large profits." Five mining engineers have unitedly signed a document addressed to the proprietors, concluding thus:—"We are of opinion that New St. Agnes will turn out to be a first-class mining property." I abstain from using the names of these gentlemen, which, however, any intending investor can see by calling at my office or the office of the company.

JOHN B. REVNOLDS. JOHN B. REYNOLDS. company

70 and 71, Bishopsgate-street Within, Aug. 8.

MINE SHARES ANOMALIES.

Sin,—It is, perhaps, not too much for the general readers of the Mining Journal to hope that correspondents who write with the object of guiding the public in their investments will allow themselves to be questioned a little when occasion may seem to require it on the statements made with regard to the different speculations. recommended or condemned. In the Journal of last week for in-stance, Mr. Tredinnick groups three or four well known mines to-gether, and, curiously enough, selects one as a mine "worth all the others put togther." Now, a few tangible reasons for such a sweeping statement as this may reasonably be asked for, as, although it is pretty generally known that the manager of the mine so extelled has his opinion of its value, the managers of the other mines referred to have, according to periodical reports, their opinions also and others besides them, or the difference in the price of shares in the several mines would not, it may be imagined, be so strikingly great.—Aug. 7.

SOUTH WHEAL CROFTY, AND ITS MANAGEMENT.

SIR,-The letter of "Another Adventurer," in last week's Journal, appears, when viewed with a fair amount of judgment, to be not only false but written in a manner calculated to injure the value of the property and the character of the manager. The writer of it would seem to be either weak, timid and credulous, and most reckless of the consequences which follow such glaring misstatements. Very seldom has a letter appeared in the Journal more thoroughly stamped with the appearance of being written with an ulterior motive. More than this, it is true in no single particular. The whole tenor is misleading. South Crofty never had 40,000% in reserves; it never More than this, it is true in no single particular. The whole tenor is misleading. South Crofty never had 40,000%, in reserves; it never was worth 120% per share, and they only touched that figure at a time when the excitement in speculative communities amounted to madness, and when that excitement was stimulated by the appointment of the master miner of the county to the management. As to the "riches in sight" which "Another Adventurer" speaks of, where are they? If there ever were such they are still in the mine, for no riches have been realised. We are inclined to think that the riches seen in South Crofty were very moderate in quality and quantity. Your correspondent has certainly never taken the trouble to inspect the mine, not even at the surface, or he would not have blundered so miserably. If he lives near Camborne we would recommend him to visit the old stamps which he mentioned—now a crusher—gaze upon an old leaky boiler, a worn out engine. crusher—gaze upon an old leaky boiler, a worn out engine earings that well nigh fly from their sockets at every revolution, and then let him describe it all in your columns as a set-off against and partial at mement for, his first letter. Why, the engine could barely work 32 heads when they were disused, and the question of adding 16 was duly considered by professional men, and fully discussed by the shareholders-no action was taken without their con

letter of "Another Adventurer" implies, then, that South The letter of "Another Adventurer" implies, then, that South Crofty shareholders are, or were, incapable of judging for them-selves. If any error has been made it must be charged against the whole body of adventurers, and not against the manager. But no mistake has been made, for at the time the new stamps and dressing-floors were erected one-half the tinstuff raised was sold to bargain buyers at a great sacrifice or stocked. Tin was very high, and mining was at the zenith of its prosperity. At such times men are not sparing of capital, and South Crofty adventurers elected to spend 10.000% on appliances for returning their own tin-tuff. Tin fell in prices, rendering many paying stopes worthless; these were stopped, and the tinstone raised fell off. Besides, now instead of sending the stone to stamps as it comes up it is carefully picked, and the waste thrown out. This so lessens the quantity that only 60 heads are needed. Shall a querulous and ignorant faultfinder be permitted to come forward and blame the owners of South Crofty for ing-floors were erected one-half the tinstuff raised was sold to bar mitted to come forward and blame the owners of South Crofty pending their capital four years ago? Fie upon all such cowardly etractors, may they live to blush at their temerity.

But leaving this part of the letter we come to what he states about

the lodes. Permit me to inform the public generally, and your misguided correspondent in particular, how South Crofty is situated. Bickford's shaft is sunk to the 195, where two lodes have formed a unction. One of these was dipping towards Tincroft sett, the ther from it. The former has been carried round by the latter, and the united lode is now more favourable than it has ever been. junction. Your correspondent need not fear for the future of the stamps;" it will have food when "Another Adventurer" will have ruined himself by his rashness. South Crofty will live down its detractors.

The letter I am referring to so teems with misrepresentation that it is self-condemned, but whilst writing we may let people know why weekly reports are not published. The ground is so hard that were weekly reports given they would in most cases set forth that nothing worthy of notice had occurred. When a good discovery is made circulars are at once issued. The manager and purser have too much of honour and self-respect to pander to the base mot ves which actuate men on the mining market. They do not play

MINING IN CORNWALL.

MINING IN CORNWALL.

Sir.—I have heard persons frequently say (gentlemen residing out of the county of Cornwall), in public company, that it requires a large capital to discover a mine. It is quite true; very large sums are invested in re-opening old mines, and, with few exceptions, the result has been a failure. To open up an old and exhausted mine is just like unto a young man marrying his grandmother. For example, the Devon Consols Mine was discovered by half-a-dozen young men from London, most of them natives of Exeter. These gentlemen, having their annual holiday, paid a visit to their native county, and on their way to Tavistock called at the Friendship Copper Mine. They were struck at the result of this mine in having recouped the original outlay and afterwards paid nearly half a million sterling in interview with Cant Josiah Hitchins took of recommended Wheal Maria, a sett commenced by Col. Drake, who called the mine after one of his daughters: 1024L was the capital Had Col. Drake sunk the shaft subscribed to commence operations. 5 fms. deeper he would have, technically speaking, cut the ors Shares in this mine rose in twelve months to 850% per share. Th lividends paid since the discovery have amounted to nearly 1,500,000/ Wheal Buller, near Redruth, we are informed was discovered for a few hundred pounds. Shares in this mine at one period were selling few hundred pounds. Shares in this mine at one period were selling at 1200% each, and paid in dividends about the same amount—that

is 2400.—by an outlay of a few pounds.

Wheal Fortune, in the Marazion district, yielded in two months 600 tons of ore, which realised 37t. 18s. 6d. per ton, and left about 15,000. profit for the two months. Most of the mines in the early 15,000. profit for the two months. Most of the mines in the early part of this century west of Camborne were discovered by the Gundry family, of Goldsithney. Wheal Vorand Wheal Fortune were wrought by John Gundry, the banker. Thomas Gundry discovered Wheals Friendship, Rodney, and Speedwell, in the parish of St. Hilary. James and William Gundry discovered Wheal Neptune, the mine being in 32 shares, and the outlay 51, per share only. The Gundry family held all but two shares in the mine. A hedge formed one of the walls of the smith's shop, material, and account house. The first division of profit for the two first months was 4444. 14s. 4d. The

party returned to the Fire Engine Inn, in Marazion. After time the little party proposed to the chairman, William Gundry, to direct in future 100*l*. per share every two months, and divide any surface every six months. The writer of this letter, when a little soph one of the party. Shares rose to 600*l*, each in a few months. Absalom Bennett started Trenow Consols, the Wellington Miss. Alfred Consols, and Tolvadden. The whole of the capital embarked in these mines did not exceed 20,000*l*. In seven years from dated in these mines did not exceed 20,000*l*. In seven years from dated in these mines did not exceed 20,000*l*. In seven years from dated in these mines did not exceed 20,000*l*. In seven years from dated in these mines did not exceed 20,000*l*. In seven years from dated in these mines paid about an early half a million of money. The first 30 years of Wheal Vorths returns amounted to 3,200,000*l*. Black tin averaged about 40, per ton during that period! More attention in future should be paid the driving adit levels in mineral districts where metallic lodes as known to exist. Adits have been the pioneers of most of the grant meaning all of the second and the second the driving adit levels in mineral districts where metallic lodes as known to exist. Adits have been the pioneers of most of the great discoveries in Cornwall, Wales, and nearly all of the great product mineral localities. In the counties of Cumberland and Westmonded adits have been driven a distance of seven miles; in fact, the companies who work the mines in these counties keep constantly driving adit levels, which accounts for the length of time some of these leaf and the levels, which accounts for the length of time some of these leaf and the leaf that the leaf that the length of time some of these leaf and the leaf that the leaf that the leaf that the leaf that the length of time some of these leaf and the leaf that the leaf that the length of time some of these leaf that the leaf tha A. BENNETT.

CARDIGANSHIRE MINES AS THEY NOW ARE, AND AS THEY WERE 35 YEARS AGO.

SIR.—When we look back at the time named, and see SIR,—When we look back at the time hadness, and see work we done with a very small capital, it is not surprising to be asked on tinually what has become of all the money that has been setting the county for some years past. The Lisburne Mines were purchased to the county of the cou done with a very small capital, it is not surprising to be asked ontinually what has become of all the money that has been sent into
this county for some years past. The Lisburne Mines were puchased for 5000/L, and a capital of 2500/L only was raised for wating, yet that was sufficient to bring these into a successful state, and
to enable them to divide hundreds of thousands of pounds sterling.
Only 500/L was raised to purchase and work Goginan, and that am
was sufficient to erect a vast quantity of machinery and building,
and to give 50,000/L in dividends in a few years. When 14,000/L
been expended in the purchase and working of the then Gogendal
Mines, comprising Cwm Symlog (now East Darren, Old Daren,
Cwm Brwyno, and some others, the amount was considered enormous
and all hope was given over by the leading shareholders. A lacky
find, however, at East Darren amply compensated for all this. The
money raised in those days was expended in developing the properties with judgment, and the results spoke for themselves, of
late years, however, the thousands and tens of thousands that have
been raised were never intended for working the mines, but for
another purpose, and never reached Cardiganshire; thence the edita
brought on mining in this county. I am persuaded that a likesum
brought on mining in this county. I am persuaded that a likesum another purpose, and deverted the county. I am persuaded that alikes an to what was invested in the purchase and working of the lisburg and Goginan Mines 35 years since would, if expended in the proper and Goginan Mines when the county is the state of which we have the proper to be a superficient of the county of the state of which we have the proper to be superficient or the county of the state of which we have the state of which we have the state of the county of the state of the working of the same number of mines, now to be had in this county, produce equally good results. Neither do I believe the "best has been taken out of the sea yet." A few months hence in all pobability will see the fulfilment of what is here written. Goginan, Aberystwith, Aug. 8. ABSALOM FRANCIS.

BEDFORD UNITED MINE.

Sin,—I beg to thank Mr. Laws for his very kind and courteous reply in last week's Journal to my enquiries of the pravious week respecting the balance of liabilities over assets, as presented to the meeting on July 19. Mr. Laws says "The difference between the two amounts arises from the determination of the shareholders at the meeting to take the estimates of costs and returns for the next for which is order to show that a call of 2s, per share was resulted. months, in order to show that a call of 2*, per share was required. This explanation is very good so far as it goes, for I understand clearly enough what is intended to be conveyed, but at the same ciently enough what is intended to be conveyed, but at the same time the explanation, viewed in connection with the agents' report leaves the whole thing enveloped in what is to me a myster, for leannot conceive what grounds the shareholders at the meeting could have had for making their calculations on, which would case a loss of 550% on the four months working. In the agents' report presented to this same meeting there were nine points of operation in the mine carried on by 38 men. The average cost perfathom for driving and stoping of these nine points was 11% as 40, and average yield or value of these nine points was 12% per fathom, or a profit of 16s. 3d. per fathom. There should be an aggregate of 18 fathoms driven and stoped in each month in order to enable the men to earn 4% per month each. Then I calculate as follows, and if I should be wrong some one, I trust, will put me right:—I will take as receipts the yield as reported of 18 fathoms, at 12%—23%; 38 men driving and stoping 18 fms., at 11%, 3s. 4d.—2011. leavings total profit per month on the work of 38 men of 15%. At first sight it would appear from this statement that the men had earned the whole 2012; but from this amount must be deducted. time the explanation, viewed in connection with the agents'r

had earned the whole 201*l*.; but from this amount must be deleted the 38 men's cost, which in the aggregate I calculate to be \$40, learing 152*l*. to be divided by 38, the number of men, which will give them 4*l*. a month each. To this 49*l*. I will add the 15*l*. profit on the 38 men's work, and the 30*l*. extra for mundic, making together a total of 94*l*., to be dealt with in the following manner: Decaugate carriage of 62 tons copper ore at 7s. per ton (which is a high pite), amounting to 21*l*. 4s.; blacksmith's wages, 4*l*. 10s.; kibble-filler, 4*l*; in an to do the oiling, greasing, blow and strik, till the garden, &c., 4*l*. each per month. Merchants' bills, 50*l*s month (I believe this is about the average). All these together make a sum total of the cost amounting to 87*l*. 14s., leaving as plus of 6*l*. 6s. for sundries. I rather think the only ones unposide for in these calculations of mine are the agents and office expens, and if this be the case one is naturally tempted to ask is it possible the shareholders at the meeting estimated a loss by these on the had earned the whole 2011.; but from this amount must be deducted and it this see the case one is inturarly tempered to as a reposi-tive shareholders at the meeting estimated a loss by these on the four months of 550L, or 137L 10s, per month, and was it for the purpose that a call of 2s, per share was required? Will M. Law kindly favour me with a little further explanation of this shjet to assist my obtuse intellect in fully understanding this enignal. New captains have new ideas, and new expressions too, for in the captain for the present of the meeting (which of course was the new captains have new ideas, and new expressions too, for all agents' report presented to the meeting (which of course was the manager) I find this statement—"This end (115 west) must be driet out to meet the shoot of ore ground the lode is now passing through. I must confess this statement has not a little confused me, for always had the notion that the ore, if any, was in the lode, admit in the surrounding country that the lode is said to be passing through; but my confusion does not end here, for it is intimated that the shoot of ore ground is coming towards the and at the 115 and that shoot of ore ground is coming towards the end at the 115 and this the lade is moving onward, and now passing through it. A Traile on Mining by Capt. R. Goldsworthy, if published, would certainly a our great men thinking, and the little ones shrug their shoulders. would create a new phase in mining.

NEW CONSOLS MINE.

SIR, -I have recently visited these works, and carefully inspected the present mode of treating their ores. I knew the mine what there were only two engines on it, and when the stuff of far being the stuff of the st quality than that which they are now treating was thrown out the burrows. Capt. Pryor and all others interested deserve grain credit for what has been accomplished in this mine, and I am fully persuaded that the system is the best which has been introduced in Cornwall. I am one of the old style miners, and until receil thought but little of chemistry, but seeing is believing, and I would be a support of the control of th advise everyone interested in mining to go through this mise and silver from the monthly products for tin, areads oper, and silver from the before-mentioned class of stuff, and they will be no longer prejudiced to chemistry.

per, and silver from the before-mentioned class of stan, will be no longer prejudiced to chemistry.

When on the mine I think there was from 18 to 20 tons of preipitate taken out of the tanks ready for shipment, which will make a produce of from 48 to 50 per cent. for copper, and 125 ozs. of silver to the ton of precipitate. Seeing such results, and considering that the same quality stuff now being treated was formerly thrown and, I was surprised, for who would until recently believe that stuff of 1½ per cent. for copper, 32 ozs. of silver per ton, 20 bs. of tin to base ton, and 10 or 12 per cent. for arsenic would pay; neither do I think that the stuff contained the whole of these minerals, or that they could be treated iointly.

could be treated jointly.

It now becomes a question what the ton of stuff is worth, and

AUG. 12, the expense of b the expense of U in this mine is a which has been will ultimately which, when ac foreigner, and I principles. The whole of these whole of these whole of these whole who whole who whole w whole of these my visit, and w on, for they are foryourselve; a for the old count Liskend, Au

The following l

Sin.-I am d ek containes en more succe machine by oplementing dercuts of ething gai es can be that even unde chine than hy down end, the A hole bored red down wa bored downwards an advarabetom? Beupwards; and then follow of come to the according to manual labour. manual labour Although the it would be ic At Wheai A granite, in whin a month, awill probably 18t per fathour understood the or four cores for four cores what could neving the time other? Keep The follow Joseph II. ad usual way, an ek operated

> ustrian gul By means the men make after st f 33 3 in. pe Wages Dynami Powder Electric Bickfor Detonat

> > Smiths' Repairi chine

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The dime in high, igh, by 23 y hand wa The aver by the mach running me boring a rui cases was h machines is instance 59 The num avoidable, nothing to have white cluding tin ever. Tha machines t used we sh

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and expedi THE HAR SiB,-M murket, and deemed in the change weather is which alil rage one, three to fo may surel punged fr

> and profi To our of nation our abili and adva rural dis Australia wealth si gressive mines of castle, Si without and Corr Or what mineral

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mesterns of breaking and dressing it. Another important feature page of breaking and dressing it. Another important leature mine is the erection of an arsenic refining works—the first has been put up in Cornwall, and the probability is that they in this indies is that they which has been put up in Cornwall, and the probability is that they which has been put up in Cornwall, and the probability is that they which has been put up in Cornwall, and their own copper and silver, ill altimately erect a furnace to smelt their own copper and silver, which when accomplished, will enable them to compete with the frequency, and I see no other alternative for us than to adopt similar foreigner, and I see no other alternative for us than to adopt similar foreigner, and I see no entire are well qualified to conduct the whole of these operations. I must say I am more than pleased with whole of these operations. I must say I am more than pleased with whole of these operations. I must say I am more than pleased with whole of these operations, and the sooner the better. Go and see any isit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented any visit, and would like to see the whole of the works commented the works for the old county.

Linkend, Aug. 9.

BORING MACHINES.

The following letter has been addressed to the Editor of the West Briton: Sin.—I am delighted to see that there is something after all in

Inclusions, and that it is not all a myth, and all the advobring mehmes, and that it is not all a myth, and all the advobring mehmes, and that it is not all a myth, and all the advobring mehmes, and that it is not all a myth, and all the advobring mehmes, theorists, and know-nothings. Your columns last sets dreamers, theorists, and know-nothings. Your columns last sets means a contained a paragraph that the efforts at Wheal Agar had set made made applies more successful than heretofore, and that by supplementing hes made in advantage for the upper holes. This is mudercuts or making an advantage for the upper holes. This is mudercuts or making an advantage for the upper holes. This is mudercuts or making an advantage for the upper holes. This is mudercuts or making an advantage for the upper holes. This is mudercut or making an advantage for the upper holes. This is neglected by the material made in the ma beel downwards for an undercut at the same angle, and would make an advantage just the same. Why, then, make the cut in the bottom? Because it is easier to strike down than horizontally obtom? Because it is easier to strike down than horizontally eight of the follow other holes above, also dipping downwards, until we can to the back or sides, and they partake more of straight holes, spording to the requirements of the case. In machine boring mand labour does not feel the weariness of striking upwards. Although the machine will strike upwards as well as downwards. Although the idle to say with the same power or force, yet effectually. Although the machine will strike upwards as well as downwards, although the idle to say with the same power or force, yet effectually. At Wheai Agar holes 39 in. deep have been bored in an end of hard againt, in which two men and a boy drove by hand labour I ft. 9 in. ma month, at 2tt. per fathom, in 25 minutes. Two men and a boy will probably drive 7 ft. in one month, working one core a day, at \$10 per hand, with one machine only, instead of two. Let it be merstood that the machine rarely works five hours a core, and that the machine are less than the same a weak. If this can be done under such conditions mierstood that the interimental of the conditions, or four cores a week. If this can be done under such conditions, plate out it not be done by keeping the drills continually going, which time necessary to run the machines from one end to anaxing the time necessary to ther? Keep at it, or the fault is in the men, and not the machines. The following experience was gained at Shemnitz in Kaiser 188 h II. adit: -The level had been driven by hand labour in the usul way, and in a special manner by rock-boring machinery. The nok operated up in was a hard greenstone. The extent of ground driven by hand was 78 metres in 182 working days, or 223 in, per day, is six hour shifts of four men per core or shift. Powder consumed per metre (39 37 in.), 12 8 lbs.; coils of fuse, 31. The cost in Astrian guidens per running metre was—Labour, 40-3; powder, 67; mith's cost and sundries, 24: total cost, 49 4 guidens.

By means of two of Sach's borers, mounted on a Nenerberg stand, the men mighting of the hours shift that one machine was used some all way, and in a special manner by rock-boring machinery.

By means of the hours shift (but one machine was used some been making eight-hours shift (but one machine was used some imeafter starting), 128 metres were driven in 161 days, or a rate (333 in per day, the cost of working being as follows:—

2937-87 muldens or 23 21 par metre.

2987.87 guldens, or 23 21 per metre.

Wages Dynamite lbs. 2758 Powder .. ectric fuses 3563 Bickford luses 140 Detonators ... 1728: 2934 07 22'78 Detonators Cost. 3.52 452.14 Smiths' cost Repairing boring ma-593.654.01 chine ... 6967:73 54:12

6967-73

The dimensions of the level driven by hand were $2\frac{1}{2}$ metres 8 ft. $2\frac{1}{2}$ in, high, 7 ft. $4\frac{1}{2}$ in, wide. By machinery 3 metres, or 9 ft. 10 in, high, by $2\frac{1}{2}$ metres, or 8 ft. $2\frac{1}{2}$ in, wide. The cost per cubic metre by hand was 8-77 guldens, by machinery 7-31.

The average spend per day of 24 hours was, by hand 0-42 metres; by the machines 0-8, or nearly double. The powder consumed per ranning metre of ground by hand labour was 12-8 lbs.; by machine-bring a running metre was 21-4 lbs. of dynamite. The rock in both was was hard greenstone. Let it not be said the expense of boringoring running metre was 17 hos. or dynamics. The rock in our machines is great in repairs. Machines vary considerably. In this instance 503 65 guidens are charged for repairs in 161 days. The numerous complications in some machines render repairs unstoldable, whereas in others—the Darlington, for instance—there is

othing to wear but the piston or cylinder. The piston can easily are white metal rings run into it, which will not cost Is. each, induding time and material, to make the piston as good and tight as ever. That continuous running at a rapid rate will knock boring-mechines to pieces in 12 months is very probable; but if extensively used we should have them at 404, each, and, surely, if we did three of four years' work in one, we should not think this exceedingly dar. All lovers of mining will hear with pleasure that profitable and expeditious boring by machinery is a recognised fact no longer capable of doubt.

THE HARVEST, AND FUTURE EXTENSION OF BUSINESS.

Sir,—Money is abundant beyond precedent, it is a drug in the muket, and unremunerative, for 1 per cent. interest cannot be deemed in any way commensurate with the risks now attending on the changing, registering, and re-transferring of securities. The weather is glorious, tempered with mellow and warm showers, which alike refresh the corn and advance vegetation, and it is now stablished beyond question that the harvest will be fully an ave-Tage one, while if the weather continues equally favourable for three to four weeks longer it must prove a very bountiful one. We may surely look for a revival of business in September or October mouths, and the question to be solved is the direction in which money will become absorbed. Foreign loans are necessarily expangel from the list of the competitive sources of investment, otherwise than our colonies and established countries such as Halland se than our colonies and established countries, such as Holland, America, Fance, and the Brazils. Italy, Egypt, Russia, Austria, Tussia, Spain, Portugal, and others are too speculative to be de-lominated securities. Joint stock banks and telegraphs are re-ticted in the stock banks and telegraphs are restricted in amount, and associated with risks, as also are shipping, manufacture, constructive and trading companies. Hence home nailways and mining are the two chief mediums open for the safe and profitable employment of capital.

To our mineral resources we owe our high position in the scale of nations, the extension of our trade both at home and abroad, and our ability to surrend and heighting capital controls. tricted in amount, and ass

whatens, the extension of our trade both at home and abroad, and our shilly to sure and heighten civilisation, while ameliorating and advancing the social welfare of the world. Throughout every mad district in England, Ireland, and Scotland—nay, in the Cape, Mastralia, New Zealand, and most of our colonies—prosperity, and Wealth spring from our mineral products. Wherever esprit and progressive vitality are evident among the masses there are assuredly mines of mineral wealth in close proximity. What would Newstella Sandapland the Millerd Countries Newthern Santh Wales he illines of mineral wealth in close proximity. What would New-castle, Sunderland, the Midland Counties, North and South Wales be without their yield of coal and iron? And, pray, what would Devon ad Cornwill be in the past but for their product of tin and copper? Or what would the future of these two counties be but for their to what would the future of these two counties be but for their bineral wealth of iron and lead, though at present the numerous bines known to exist, and their discovered wealth, languish for bineral wealth of iron and bring the products to market?

The lead witness of Salon. The lead mines of North and South Wales, with those of Salop, buban, Derbyshire, Westmoreland, Yorkshire, and the Isle of Man, tabrace the choicest prizes of lead mining, and we may enumerate

the following as the chief companies recognised and dealt in upon the London market—Cashwell, Duchess of Westminster, East Daren, Foxdale, Great Dyliffe, Great Laxey, Green Hurth, Grogwinion, Lisburne, Llanlidloes, Melindur Valley, Minera Mining Company, North Hendra, Prince Patrick, Roman Gravels, South Prince Patrick, Tankerville, Van, West Chiverton, West Wye Valley, and Wye Valley. These are all established properties, though each and all differ in character and inherent worth and which practical intelligence alone character and inherent worth, and which practical intelligence alone can discern. Our railways and shipping interests derive sustenance from and are allied with our mineral productions; they could neither produce their locomotion or pay their dividends without the aid of mineral products, nor could they be constructed without our iron and other metals. Manufacture, constructive undertakings, and all enterprises chiefly arise from this source of England's wealth.

The avenue of the mining interest of Great Faction is wooderful

The extent of the mining interest of Great Britain is wonderful even to contemplate, and far more so to realise, in their varied application and practical utility—they add to, strengthen, and expand the trade and commerce of the country. Our mineral and metallic yield exercise a powerful influence over the social position and amenities as well as the industrial energies of the community. What would Cornwall be without its mines, and though these are still depressed and languishing from the discoveries of tim in Austra. still depressed and languishing from the discoveries of tin in Australia, yet it is hopeful and cheering to learn that recent operations have laid open rich and profitable lead mines that will shortly, in the opinion of authorities, revive the prestige and stimulate industry throughout the whole county. Again, at Penstruthal a very important discovery of copper has been made, not only in the shaft, but in the two upper levels, that promises to place again this formerly rich mine in a prominent and attractive position, yet the shares stand depressed, selling at 50 per cent. discount, while they are worth 100 per cent. premium.

79, Cornhill, London, Aug. 11.

Consulting Mining Engineer.

FLINTSHIRE LEAD DISTRICT-THE DRAINAGE SCHEME.

Sir.—It is now twelve months since I addressed to you, and you kindly inserted, the first of a series of letters under the above heading. In those letters I briefly gave an account geologically and otherwise of this one celebrated district, the reason of its decline, and why mining upon a large scale should be resuscitated, &c. In consequence of schemes having been lately introduced where the multiple are asked to find can its extensive is turned towards the dispublic are asked to find capital, attention is turned towards the dis

public are asked to find capital, attention is turned towards the district; consequently information and statistics are being sought after by those who have an idea of investing their money.

Since I last addressed you, notwithstanding the dull state of mining and trade generally, more real attention has been given to the natural resources than for some years previous, and this, in a great measure, has been brought about by the spirited interest taken by his Grace the Duke of Westminster, and other large landed proby his Grace the Duke of Westminster, and other large landed proprietors, in the scheme to unwater that part of the district extending from the Halkyn Mountain to near the town of Mold. I am informed upon good authority that the sum of 30,000l, has been subscribed to carry out this long-wanted undertaking, and I am further informed that the contract for these works will be immediately let and the works commenced in real earnest, and that the most anyoned horizon machinery will be used as that the under-

most approved boring machinery will be used, so that the undertaking may be completed at the shortest possible date.

To give a short account of the progress made in the various mines since the date of my last letter I would, commencing at the north and of the district, state that the Talargoch Mines continue to send to market an average of 100 tons of lead and 220 tons of blende monthly. The Talacre Mines, I believe, will shortly be opened by a spirited company. These mines when last abandoned sent to market 100 tons of blende per month, besides lead. The then price of blende was about 2l. per ton; this same ore will now realise about 5l. per ton, and this, independent of lead, will allow of moderate profits. ton, and this, independent of lead, will allow of moderate profits. As in this district blende almost invariably "rides a good horse," good deposits of lead will, doubtless, be laid open in depth. The engines are erected upon the property, and in about two months the mines could be drained of water, and returns, as above mentioned, commenced forthwith. No mining of importance is being carried on between these mines and the town of Holywell, with the exception, perhaps, of Gorsedd and Celyn Level Mine, although there are runs of valuable mineral ground undeveloped.

To the south of Holywell good progress has been made by the West Milwr Company to develope a maiden portion of the once celebrated Milwr vain. Lam strongly of online the patience of

celebrated Milwr vein. I am strongly of opinion the patience of the shareholders will soon be amply rewarded. Proceeding south we come to the St. Patrick Mine. Most vigorous operations have been carried on here in driving cross-cuts in the three bearing measures—chert, fossiliferous, and carboniferous limestone, the indications met with in these various explorations point grand deposit of lead in the immediate neighbourhood. The of the rich known lodes has just been cut into in the carboniferous limestone, and from which splendid specimens of lead have been taken. As the works are prosecuted upon this lode away from the influence of the cross-course it will doubtless be found to contain masses of ore. I look upon this property as a certain success. Proceeding again south it is reported a good discovery of lead has been made in the vicinity of the Rhoesmor Mines, but I shall leave full particulars of this for a future letter.

To the south of this a valuable east and west lode has been dis-covered in an adit level known as Rhyd Alyn Mine by a party of adventurers. This lode has not yet been fairly developed, but 15 ton of lead from it are sent to market monthly; the returns, I am in-This lode has not yet been fairly developed, but 15 tons

About two miles to the south of Mold are the Flintshire Mines. The main engine-shaft is sunk to a depth of 144 yards, whence a level has been extended west to intersect the lode known as the Jamaica Flat; this run of ore-bearing ground has been proverbially rich westward, and is certain to make tremendous deposits of ore coming eastward. Great pluck and perseverance have been displayed upon the part of the proprietary in developing this property; they have, however, succeeded in discovering the Flat, and from which they have extracted a quantity of solid lead ore, some of the lumps weighing upwards of 1 cwt. As is generally the case in this district, directly the Flat was intersected an influx of water took place which has tried the pumping power to a great extent. It is, I be-lieve, the intention of the proprietors to erect a more powerful and more suitable pumping-engine; when this is accomplished the water will be easily mastered, and the adventurers richly rewarded for

leaving the subject of this mine I must pay a compliment to the manager (Capt. Miners) for the admirable manner in which he has contended with the rush of water, considering the moderate amount of engine power at his command. Parallel with the last-mentioned mines to the west is a new mine, named the True Blue. I have not yet had an opportunity of visiting the property, but it I have not yet had an opportunity of visiting the property, but it is most highly spoken of in the neighbourhood by those who are supposed to be good judges. Further to the south is the Denbighshire Consolidated Mine. A good discovery has lately been made here, which, when more fully developed, is expected to place the mine in the Dividend List. Four miles south of the last named are the Craigiog and Vein Canol Mines. A new company called the Bodidris Mining Company (Limited) has just been formed, with a capital of 30,000%, to work these valuable properties.

A very fine discovery of lead has been made in the 30 and 45 yard levels upon the Canol lode, driving east towards the junction of this lode with Craigiog. This junction it is expected will be reached within two months of the present time, and will doubtless develope a grand course of lead ore. Already considerable reserves of lead

a grand course of lead ore. Already considerable reserves of and blende have been laid open by the driving of the two levels before mentioned. From the richness and character of the ground at this shallow depth I look upon the property as a channel for investment

rather than a speculation.

The next mine to the south, and about three miles distant, is the well-known Minera Mine. This property, which has been worked by the present company for about 35 years, has sold mineral to the value of upwards of 1,600,000%, of which about 590,000% has been paid in dividends, and the original 25% shares have changed hands at upwards of 300% per share. I am pleased to be able to state that

this grand old mine has much improved of late. A good discovery of lead has been made in the western end, from which one pare of men broke, I am informed, in one month upwards of 60 tons. A discovery has also just been made by driving a shallow adit level in the chert measures. When at the mine a fortnight since I saw some fine specimens from this drivage, and have since learned that a quantity of rich ore is being extracted. I am of opinion there is a great future for this mine in the chert measures, as there measures here are unusually strong and almost wholly undeveloped. To the south a short distance is a mine called Cefn-y-Gist being worked successfully by a private party. A good discovery of lead and blende has been made at a depth of about 60 yards, and laid open for upwards of 80 yards in length, thus showing good reserves, considering of lead has been made in the western end, from which one pare of wards of 80 yards in length, thus showing good reserves, considering A. W. Thomas, Coleman-street, Aug. 8.

THE WILD DUCK, OR SPORTSMAN'S ARMS, MEETING.

THE WILD DUCK, OR SPORTSMAN'S ARMS, MEETING.

"Well," says Jan Temby, "I don't know men how you feel after such a fine denner, but I feel pure and comfortable like, and could not be vexed with anybody now if I tried to, but I jest see'd old Tom Tryall in the Kitchen, and a es looking fine an wisht. Had a long run of poor speed, and thats enuif to make any man look wisht, specially when a got a house full of small cheldren. Shall we ax'n in sose to have a bit of cold meat and a glass of beer?" "Iss, iss," says one and all, "Com'est in Old Tom, there't not looking very well, and have a bit of somethen to eat." "Tanakes Jan," says Tom, "for I believe I never wanted a bit of good tamping more than I do this minnit, for I tell ee men, when a poor fellow got a long run of poor speed tes very little flesh he can see." "That's true," says Jan, "but throw to un in earnest old Tom, thee'st welcome, for we've got lots more than we can eat, and take a glass of beer to wash'n down, and then draw breath a bit, and thee's git on like a fighting cock." So after some time old Tom, like Capt. Joe O lgers, when he had obeyed the "canls of Nater," said "Well a en I must tell ee that I'm so comfortable as I can live, and I would say it with great surreverence that I thank ee from the bottom of my heart for this here grand meal, for when I came in here I was ready to drop, and now I could jump over a house." "We're all very glad to seen ee, old Tom," says Jan Jewill, "but han't ee hee'rd anything new lately?" "Why," says Tom, "the lost I hee'rd was about Peter Jack. Peter went to the survey last Saturday, and tho't he was very well, but when his pitch was caaled up Capt. Jo said 'Why thee'st drunk, Peter." 'I drunk,' says Peter, 'why I'm fresh and fasten, Captain, coming from breakfast." "That's very well for Peter," says Cousin Will, "but where did we break off men in our last discourse about the mines ?" "Ob. I can tell ee," says Jan Temby, "we jest got to the west end of Old Polgine." "I believe you are right, says Cousin Will, " ee tell how West Condurrow ded'nt do better?" "I remember," says Cousin Will, "when Condurrow was a very rich copper mine, and I've seen large pieces—black and shining like pitch—which were worth 40l. a ton for copper. With regard to the western part of the sett, it is my opinion if the shafts are sunk 100 fms. de-per a rich mine will be found." "I believe that," says Jan Jewili, "for they are not thro' the gossan yet." "Well, how sose," says Jemmy Dowa, "tes a fine passle easier to taalk thun tes to hackey, but can any of ee tell how that Wheal Harriet was not a good bul?" "Oh, my dear soul," says Jan Temby, "tes very easy to ax a question, but 'twill take a brave stiff fellow to answer." "But can ee tell?" says Jemmy Dowa. "Now, according to my opinion," remarked Jan Temby, "there's a great channel of moor stone running thro' Canarton and Caim Entral into Wheal Harriet, and a come to a wedge going west near old landford Temby's Camborne Bicken, and 'twas narron and call Entra into Wheat Harriet, and a come to a wedge going west near old landlord Temby's Camborne Bicken, and 'twas that body of moor stone that squeezed the life out of Wheal Harriet, for the lodes north and south of this ridge are good." "I suppose you all know coming up Bicken Hill," asked Old Tom, "where Jan Bennett's-lane is, and the old tin bounds by the corner?" Everyone knew the spot well. "Well," says Old Tom, "there's the finest view from top of the hedge turning into Jan Bennett's that won ever sen in this world. Hundreds of hove and maidean men and we get sen in this world. Hundreds of boys and maidens, men and women. come there in fine weather to see this wonderful sight, and they do un in this way, when pon the top of the hedge they turn their backs towards Camborne, and then look between their legs, and there sure towards Camborne, and then look between their legs, and there sure nuff they see the world turned upside down. The North Channel is in full view, and vessels sailing bottom up. Camborne and St. Ives is turned upside down, and hosses and men seem to go about heels up, and trees too. Why I tell ee sose there's nothing like it in this here world, and Jan Priddex said it was a natural granderama." "I vote," says Cousin Will, "that Old Tom, be asked to our next meeting, and that we then go a little more into mining matters." All agree to this.—Cousin Jack's Unpublished MS.

MINE CAGES.—Mr. A ARMSTRONG, of Glasgow, has patented an approved safety-cage for mine shafts. The invention, which relates MINE CAGES,—MI. A ARMSTRONG, of Glasgow, has patented an improved safety-cage for mine shafts. The invention, which relates to improvements in safety-cages, consists of means or apparatus by which in the case of accident from the breaking of the suspending rope or chain, or from other cause whereby the safety of the cage and its contents are imperilled, the cage is locked or firmly held in position in the guides, and is thereby saved from falling to the bot-tom of the mine shaft. The apparatus whereby this object is effected consists of a wheel, cam, or other equivalent body, placed eccentrically on a pin or stud fixed in the framing extending from side to side of the cage and preferably immediately under the roof thereof. The wheel or cam is provided around its circumference with teeth, which become deeper and wider towards that part which, when the wheel or cam is in its normal position, is situated furthest away from the cage guides. Against the surface of one of the teeth one end of a spring bears, the opposite end being fixed to the roof of the eage, or in other convenient position. One extremity of a short ain is also attached to the upper side of each wheel or cam, its posite end being secured to the suspending rope or chain of the opposite end age. By this means when the cage is in proper working order the tension of the suspending rope or chain keeps the fluted or toothed wheels or cams out of contact with the cage guides; but should the suspending rope or chain break or become slack the short chains nerein before referred to release the wheels or cams, and these by the action of the springs upon them are forced eccentrically out-wards, thereby causing their teeth to enter into the cage guides, and maintain the cage in position. Instead of employing one wheel or cam at each side of the cage, as herein before set forth, two or more such wheels or cams may be used, it being explained that the in-ventor does not confine himself to the arrangement described, as me may be modified to suit different constructi and guides.

Unsinkable Vessel of War.—A vessel so designated has been designed by Mr. W. M. Pollexfen, C.E., who has also published a pamphlet descriptive of it. He proposes to construct the hull of pampines descriptive of the reproposes to constitute the number of longitudinal and transverse layers alternately, with the butts properly shifted, bolted together, and all caulked water-tight; outside he proposes to have 4-in, thick oak or teak planking running fore and afr, and this sheathed with copper or yellow metal plates. In the centre of this solid arm will be formed compartments large enough for machinery, coals, comparing stores cover more &c. all these compartments as well as secre this solid arm will be formed compartments large enough for machinery, coals, ammunition, stores, crew space, &c.; all these compartments, as well as screw shaft tunnel, to be plated with 12 in, thick armour inside, and all passages for saction and discharge pipes to and from the engines to be also armour plated. The necessary provisious are made for proteeing the structure from annihilation by fire and from damage by the enemy's shells. To judge from the drawings contained in the pamphiet there is much to justify the inventor's belief that "this type of vessel will be the man of war of the future."

HOLLOWAY'S PILLS—NO MYSTERY.—Whenever the blod is impure of the general health is invaried the human body is predisposed to attacks of any prevailing epidemic. The first indications of the faulty action, the first sense-tions of deranged or diminished power, should be rectified by these puritying pills, which will cleanse all corrupt and reduce all erring functions to order. These pills counteract the subtle poisons in decaying animal or vegetable matter, and remove all tendency to bowel complaints. billings.

which will cleanse an corrupt and reduce at ering functions order. These plus counteract the subtle poisons in dealying animal or vegetable matter, and remove all tendency to bowel complaints, billiousness, and the host of an uniquing symptoms arising from tomach. The fruit season is especially prome to produce irritation of the bowels and disorder of the digestive organs; both of which dangerous conditions can be completely removed by Holloway's corrective medicines.

Meetings of Bublic Companies.

FRONTINO AND BOLIVIA (SOUTH AMERICAN) GOLD MINING COMPANY.

An extraordinary general meeting of shareholders was held, on Tuesday, at the offices of the company, Gresham House, Old Broadstreet, Mr. Thomas Eyre Foakes in the chair.

The meeting was called for the purpose of considering the advisability of authorising the paymentof the dividends quarterly instead of half-yearly as at present authorised by the Articles of Association.

The notice calling the meeting was read by Mr. J. Jameson Tru-

The notice calling the meeting was read by Mr. J. JAMESON TRU-RAN, the secretary.

The CHAIRMAN said that the present meeting was called for the purpose of passing a resolution which was suggested at the last meeting. That resolution was to the effect—"That this meeting is of opinion that it is desirable to amend the Articles of Association of the company by authorising the directors to dealers displaced. of opinion that it is desirable to amend the Articles of Association of the company by authorising the directors to declare dividends, if the profits of the company admit, at quarterly intervals." At the meeting the directors said they hoped shortly to be in a position to declare quarterly dividends, and they thought it was undesirable to have to go to the trouble and expense of holding quarterly general meetings of the shareholders for the purpose of enabling that to be done. The old clause (No. 122) in the Articles was:—"The direction of the company in general meeting do." done. The old clause (No. 122) in the Articles was:—The directors may, with the sanction of the company in general meeting, declare a dividend or bonus, or both a dividend and bonus, out of the profits of the company, to be paid to the shareholders in proportion to their shares, and when the profits of the company shall be also before the company shall be also be also be also before the company shall be also be also be also before the company shall be also be also be also before the company shall be also be also be also before the company shall be also be a profits of the company, to be paid to the shareholders in proportion to their shares, and when the profits of the company shall permit the directors may declare half-yearly dividends. The shareholders would see by that Article that the directors could not pay dividends other than half-yearly without the sanction of the shareholders obtained at general meeting, and it was proposed to alter the article as follows:—"The directors may, with the sanction of the company in meeting, declare a dividend or a bonus, or both a dividend and bonus, out of the profits of the company, to be paid to the shareholders in proportion to their shares, and when the profits of the company shall permit, the directors may, without a resolution of a general meeting, declare quarterly interim dividends." The directors would thus be enabled to pay quarterly dividends without calling a special meeting of the shareholders. He proposed—"That Article 122 of the Articles of Association be amended by adding thereto after the word 'may' in the bottom line thereof the words 'without a resolution of a general meeting,' and substituting for the words 'half-yearly' the words 'quarterly interim."—Mr. BAXTER seconded the resolution.

of a general meeting, and substituting for the words 'maryearly' the words 'quarterly interim.'"—Mr. Baxter seconded the resolution.

In reply to a question relative to the sending out of the monthly report the Chairman said that the directors had adopted the plan of sending out monthly reports in order that all the shareholders might be kept fully acquainted with the position of the mine. Formerly country shareholders had been somewhat at a disadvantage, in consequence of not being able to obtain prompt information relative to the position of the mine, but this was avoided by the publication of these monthly reports.

The resolution was then put and carried.

A SHAREHOLDER asked whether the regular monthly report had been received?

The CHAIRMAN said the regular monthly report had been received, but not the accounts. Mr. White had gone up the country to take over the Silencio Mine, and Mr. Arango was also at Meleilin looking after the pumps.

A SHAREHOLDER: When will the Silencio Mine be at work?

The CHAIRMAN said that the pumps—work was not quite complete, it having been delayed a little by the work which the Government required to be done. Mr. White was going to leave on the 1th or 11th of June, and he hoped that a few days after that the pumps—work would be finished, but it would take a week to send it up to the mine. The engine was errected. A short time since the directors sent the shareholders a statement of what the Silencio Mine had done at the trial shaft and the engine shaft. The engine-shaft was 10 fathons deep, and the other shaft 4 fathoms deep, and as the mine was so shallow he did not suppose it would take more than a week or fortnight to drain it, and Mr. White said there was 55 per cent. to be got from that mine almost immediately. Mr. White said there was a wonderful future before this mine, and he believed the Silencio Mine would be one of the greatest mines in South America. Up to the pines time wonderfully truthful in all he had seleved the Silencio Mine would be one of the greatest mines wonderful future before this mine, and he believed the Silencia Mine would be one of the greatest mines in South America. Up to the present time Mr. White had been wonderfully truthful in all he had stated, and he was indeed a man of a thousand. He referred to the very friendly manner in which the bankers, Messrs. Restrepo, had behaved to the company, they having lent the company money at 8 per cent. when the shareholders refused to come forward and lend it

money at 8 per cent. when the shareholders refused to come forward and lend it at 12% per cent.

In reply to a SHAREHOLDER the CHAIBMAN went into some details relative to the Antioquia Mine, from which the shareholders anticipated profitable results, and he pointed out that the Frontino Mine possessed a great advantage in having but a small capital, so that a comparatively small profit would yield handsome dividends. As regarded the 10,000 unissued shares it was probable that they would eventually be issued amongst the shareholders.

A SHAREHOLDER: Do you contemplate being able to pay quarterly dividends?

—The CHAIBMAN: Yes, we do.

A cordial vote of thanks was then passed to the Chairman and directors, and the meeting broke up.

NEWPORT ABERCARN BLACK VEIN STEAM COAL COMPANY. The ordinary general meeting of shareholders was held, on Wednesday, at the offices, St. Mary Axe,

The Rev. HENRY WARD presiding.

The notice convening the meeting was read, and the report was

The CHAIRMAN said that he thought he could with reason offer eome congratulations to the shareholders on this occasion more than ever they had felt it in their power to do. The progress since last year had been most favourable, and their speed in sinking would fairly claim to have realised the expectation held out to them, if it rainty claim to have reashed the expectation held out to them, it is had not surpassed them. In such a work as this sudden risks and dangers were incidental, but there had been no delays on account of difficulties in the working, or through increase of water. The pumping-engine thoroughly did its work, so that 20,000 gallons an hour were pumped up when there was only two and a half strokes a minute. It was capable of working ninestokes, so that they were macterial to the stroke that might come down upon them. asters of any influx of water that might come down upon them. With regard to the work men's cottages, some people thought they were rather too ready in building them, but he believed that would not prove to be the case, for they all knew that a house was all the better for standing and having a little seasoning before it was inhabited. for standing and having a little seasoning before it was inhabited.
The cottages were built with stone and slated roofs, and there were
65 ready for occupation. The seam of coal which was struck was 65 ready for occupation. The seam of coal which was struck was superior to what was expected, and which could be made to pay a reasonable or even a pretty good profit. A large and magnificent specimen of this coal was sent up last week, but the carmen had declared that it could not be got into the office. It was a matter of regret that it was not before the shareholders, but they would have notice of where it could be seen. He was sorry to say that the managing director had been taken with a bad sore throat, so that he had found it impossible to be present. Mr. Green, the underground manager, was present, and would give any details they would wish respecting the nature of the company's progress. They would see that they had been very desirous not to press the shareholders for cash, so that the directors had since last autumn foregone any fees whatever, and Mr. Green, although he was entitled to an advance of his salary, had been kind enough to forego that claim for the prehis salary, had been kind enough to forego that claim for the pre-He would now move that the repo Bowden seconded the resolution.

Mr. JOHN CORY regretted that the specimen of the coal was not there, so that the shareholders might see it. He might say that in Cardiff they had had a truck laid down, and had burned some in the fire. It had done remarkably well, and had been better than was expected. He was pleased to think that the coal was in every re-

Black vein. They then hoped to be able to pay dividends to the long-suffering

shareholders.

Mr. Cony added that they could do with the present capital. They had 45 yards to get down to the Black vein, which would cost about 45%, a yard for sinking, and another 15%, or 20%, for bricks and materials, so that it would cost them about 2600%.

A SHAREMOLDER said they had received no dividend or interest for their money, while the directors had drawn 3575%, in fees. They had certainly been paid well for what they had done.

The CHAIRMAN replied that this was very considerably less than the Articles of Association would justify them in receiving. He did not believe in directors sitting and working for nothing.

Association would justify them in receiving. He did not believe in directors sitting and working for nothing.

A SHARKROLDER remarked that it should be understood that a board had often a great deal more to do during a time of difficulty than they subsequently had. The CHAIRMAN said they had forgone a considerable amount.

Mr. Bowden said they had gone further than that by making themselves jointly and severally liable for the company. The following retiring directors were then re-elected—Rev. Henry Ward, and Messrs. Raikes, M.P., Bowden, and Holman.

The auditor—Mr. W. E. Bagshaw—was also re-elected.

Mr. Green then explained the workings of the company, and said he was certain he would reach the Black vein before the beginning of December.

A vote of thanks to the Chairman and directors closed the proceedings.

WEST MOSTYN COAL AND IRON COMPANY. The second ordinary annual meeting of shareholders was held at annon-street Hotel, on Thursday,
Col. J. D. Shakespear, F.G.S., Assoc. Inst. C.E., in the chair.

Mr. John Davies (the secretary) read the notice convening the meeting and the minutes of the preceding one, which were con-firmed; the report and balance-sheet, having been previously cir-

firmed; the report and balance-sheet, having been previously circulated among the shareholders, were taken as read.

The CHARMAN, in moving the reception and adoption of the report and accounts, said their first duty would be to record their sincere regret for the untimely death of their colleague—Mr. Shaw, their late Chairman—who had always laboured earnestly for the company, and especially when a cloud was hanging over it which threatened to put an end to its existence. Ten months since their first general meeting was held, and at that time the shaft had gone 22 yards through the shifting strata and about 4 yards in the clay, their total depth then being about 28 yards. There was then some delay through the iron tubbing cutter getting stuck in the shaft. delay through the iron tubbing cutter getting stuck in the shaft, but by the end of the year they had got down to the depth of 100 ft.; by the end of March or beginning of April they had reached 150, and up to the present time they had completed another 150 ft., so that during the last four months they had doubled the depth of the shaft. In April they passed through four seams of coal—one 2 ft. 8 in. thick—and in the middle of last month they struck the 9-ft. seam, and were now sinking to 20 or 30 verds below that to strike another.

shaft. In April they passed through four seams of coal—one 2ft. 8 in, thick—and in the middle of last month they struck the 9-ft. seam, and were now sinking to 20 or 30 yards below that to strike another seam of similar thickness. They might be ultimately going down to another seam of cannel and house coal, some 20 yards deeper, but before doing so they would consider whether it were preferable to sink to that seam at first, or to be content with their two seams for the present, and at once put down the second shaft, so as to get coal to market. The sea wall was nearly completed with the debris taken out of the shaft. He then formally moved the resolution.

Mr. RYLANDS seconded the motion, and expressed his sorrow for the death of Mr. Shaw. He gave the company the best attention he could give, and sought to remove the difficulties they had to contend with in their early period of existence. Now they were through their difficulties they might be disposed to underract them, but the company was deeply indebted to Mr. Shaw for his exertions. They also owed their thanks to Mr. Higson, their engineer, for the remarkable ability with which he contended against the difficulties which had to be encountered. The shareholders would quite understand that in sinking through the shifting strata there was more than a probability that it might run in, but their operations were now of the ordinary mining character, and the sinking of the second shaft would also be more easy than when they were working comparatively in the dark; as they necessarily were with the first one. They had now actually proved a valuable seam of 9 ft. coal, and if they went down another 30 yards they would reach another seam of similar character and thickness. When they reached that seam they would have to raise additional capital, either to sink the present shaft to the still lower seam or to sink the second shaft to work the shallow out. The present price of coal was so low that it would be almost foolish to sell, so that there was no hurry in bringing

shall be dealt with. He was convinced that with patience and jungated the might look forward to being able in two or three years to supply coal at remunerative prices.

The CHARMAN had forgotten to mention that there had been some litigation between the company and Sir Pyers Mostyn. It was not yet finally settled, but negociations were going on, and the result would be to the company's advantage. The SECRETARY, in reply to questions from Mr. BURNET as to the items in the accounts, stated that of the 75,000. worth of deferred shares given to Mr. Viner Clarke as purchase money for the lease and property 4394 came back to the company under the compromise, but 3106 had passed into other hands, and were beyond his control, and, therefore, remained as allotted by the arrangement of the investigating committee. The reason of the old amount for directors' fees was that one gentleman had only bees elected and received fees for a portion of the time. The item of 70. 2s. 4d., for stationery, he considered a small one, as it included the company's books of account. The item of 4223, T. V. Clarke compromise, included 400. cash paid interest. The compromise with Mr. Clarke could not be carried out unless the guaranteed interest were provided for.

Mr. SURTES remarked that Mr. Burnet might think the 4000. a large amount, investigating committee found that the best terms they could make was to compromise with Messrs. Clarke and Smith; and, as those gentlemen returned 45,000. worth of deferred shares, the arrangement was a good one for the company, because they hoped to get much more than 4000l, on the re-allotment of those shares. Dr. MANING had always been convinced that they had a good property, but was doubtful whether they had money enough to carry them through; he would, therefore, like to know how much money they had available, and the probable cost of the work that had to be done?

Mr. Higson (the company's engineer) said that, as to the finances, he could, of the work that had to be done?

erefore, like to know how much money they had available, and the probable cost the work that had to be done?

Mr. Hisson (the company's engineer) said that, as to the finances, he could, of carse, say nothing; but as to the cost of placing the colliery in good and comete working order, he could give a pretty close estimate. From 18,0001, to 20,0001, daiready been expended in and about the works, and for the sinking of the prent pit to 180 yards deep, and sinking the second shaft to the same depth, concerning the necessary railways, making sas walls, putting down steam-engines, silers, &c., he would say that from 35,0001, to 41,0001, would have to be expended; is would not be required at once, but would be spread over about two years. The liway, and commencement of the second shaft, would entail an expenditure in e next 12 months of from 14,0001, to 15,0001, but if they decided to adopt the orteonomical but not the best course, and to turn the whole of their present ant to use in getting coal to market, they could make 30,0001, suffice, though as neglineer he would estrainly recommend that the whole of the work be done, did that the expenditure of the 40,0001, be decided on. He fully believed in the undness of the property.

and that the expenditure of the 40,000% be decided on. He fully believed in the undness of the property. The CHAIRMAN said that their policy was a policy of caution. They had 10,000%. The CHAIRMAN said that their policy was a policy of caution. They had 10,000% call up. Then there were the 1909 preference and 4500 deferred shares to allot, and by their Articles of Association they could raise money on debentures, but key had not decided the exact line to be adopted. They had ample money to impliete the present shaft and get to the second seam of coal, and the shareholders ould then be consulted. They had money to go on for about six months. Mr. RYLANDS was glad to be able to state, on the authority of Mr. Higson, that is unpaid calls would take them to the very bottom.
Mr. Higsor considered that a good profit would be obtainable upon the whole pital which would have been raised by the company—125,000%—by the time the ork was finished.

ork was naished.

The report and accounts were then unanimously adopted, Messrs. J. and H. ddams.n were re-appointed auditors, and thanks having neen voted to the Chairnan the proceedings terminated.

THE LOVELL MINE.

A general meeting of shareholders was held at the offices of the company, Gresham Buildings, Basinghall-street, London, on Tuesday,

Mr. JOHN LEYBOURN GODDARD in the chair.
Mr. Granville Sharp (the secretary) read the notice convening the meeting. The minutes of the previous meetings were read and

unts for 20 weeks, ending June 24 showing a debit balance of 351. 0s. 8d., having been read, were regived and passed.

was then read, and the recent operations shown explained by the manager upon the plan and sections of the mine;

Cardiff they had had a truck laid down, and had burned some in the fire. It had done remarkably well, and had been better than was expected. He was pleased to think that the coal was in every respect of such a superior quality.—The resolution was then put to the meeting and carried unanimously.

Mr. Wilson said that a large sum of money had been spent, and he thought it would be well if the Chairman would enlighten them as to the future prospects of the mine; and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended west on its course, and intersected the south lode in this level. We have extended were yronising point; this end is observed to cross cut, is communicated with the 40, which well to let the

per fathom. The lode in No. 2 stope, west of rise, in back of the 40, is 8 to worth 300, per fathom; working by six men, at 56. per fathom. The lode in the stope east of rise in the back of the 40 is 10 ft. wide, worth 300, per fathom; worthing by six men, at 56. per fathom. The lode in the stope east of rise in the back of the 40 is 10 ft. wide, worth 32 fathom; at this point the lode seems to be dippling east and down as a pretty sharp angle, and looks exceedingly promising to make a regular work in the six men, at 4. By the state of the 30 east of cross-cut is 6 ft. wide, worth 32 inch in this direction; this is celing worked by six men, at 4. By the fathom. In the last three months we have done a great amount of ostenia, the purpose of proving the eastern part of the mine, and we are pleased to si nake succeeded in infuling a well-defined masterly lode, which spleased to sinking here at 42. per fathom, and in a short time we shall be fathered by more as a sinking here at 42. per fathom, and in a short time we shall so we have four depth to open cost and west on its course, where we think a valuable addition be made to the property; this shaft is within a short distance we have low mittee's management of the company's affairs, a considering the present of the company's affairs, a considering the present in ground; not less than 16 fms. of cross-cuts have been draw, at an a price of 142, per fathom, costing 2242; also a quantity of surface exceion-changing house, sampling house, smiths shop, material rom, at an aprice of 142, per fathom, costing 2342; also a quantity of surface exceion-changing house, sampling house, smiths shop, material rom, at an another the exceavation for the erection of the engue at the stamps, ma rare not quite as much as we expected, owing to the sudden dokance the main shaft, which has added considerably to the expenditure. In the shall have the surface work and banced the main shaft, which has a we expected, owing to the sudden flowing of the able lode in the 30 end and one of the l

MEDLYN MOOR MINING COMPANY,

A meeting of shareholders was held at the offices of the company, Gresham Buildings, Basinghall-street, on Wednesday, Mr. Edward Hilton in the chair.

Mr. EDWARD HILTON in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting and the minutes of the last meeting—on March 24—which were thereupon confirmed. A statement of accounts up to June 10, showing a balance against the shareholders of 811.42, was

The CHAIRMAN, in alluding to the statement before the meeting The CHAIRMAN, in aniguing to the statement before the meeting remarked that it contained several rather heavy items of expenditure, but from his knowledge of mining, and he certainly had had some experience, he could assure his fellow-shareholders that such expenditure had been incurred in their best interests, for he contained that the community has mine spandilly and thoughts. expenditure had been incurred in their best interests, for he co-ceived that to open up the mine speedily ani thoroughly was by far the best policy to be pursued, inasmuch as the adoption of such a course would most surely result in sales at an early date, and sequent returns upon the outlay. He, moreover, had no faith in half-measures, and, as a largely interested shareholder, was contined that the secretary and the manager of the mine had mutually saled most judiciously in employing sufficient labour and carrying out-suitable operations for the earliest attainment of this object section.

sequent returns upon the outlay. He, moreover, had no faits in half-mensures, and, as a largely interested shareholder, was convined that the secretary and the manager of the mine had mutally sed most judiciously in employing sufficient labour and carrying out suitable operations for the earliest attainment of this object, and the could say with confidence that they might now calculate with estainty upon the past returns being henceforward very largely increased. He (the Chairman) concluded by moving that the statement now presented to the meeting be received and passed, which proposition was duly seconded, and unanimously agreed to the with the greatest interest by the shareholders, as every step in the progress of the wind and it eclanical details, were rendered perfectly includiblying the work done during the last four months, together with our opinion of the progress of the work done during the last four months, together with our opinion of the passed of the nime. Since with your request, we send you a report in deals the work done during the last four months, together with our opinion of the passed of the nime. Since the meeting on March 25 also the engine-shift labe and divided the shaft from the 11 told completed to the 27; we have also careful additioned diving towards. No. 1 south judg meeting the last of the work done during the last four months, together with our opinion of the passed of the nime. Since when the meeting of March 25 also the engine-shift labe and divided the shaft from the 11 told completed to the 27; we have also careful divided the shaft from the 11 told completed to the 27; we have also careful divided the shaft from the 11 told completed to the 27; we have also careful divided the shaft from the 11 told completed to the 27; we have also careful divided the shaft from the 11 told completed to the 27; we have also careful divided the shaft from the 11 told completed to the 27; we have also careful divided the shaft from the 12 told completed to the 27; we have also careful divided t

for say the next three months until the western shaft is communicated with 17 fm. level?—Captain PRISK: I think by simply disposing of what was necessarily be brought to surface as we push the work forward we may impled calculate upon selling 100/ worth a month, but this will depend upon the sape of water for dressing the tim.

A BHAREHOLDER: And when you have completed the shaft?—Capill PRISK: Why then we may reasonably expect the returns will be a limit to the complete of the shaft of the complete of the complete of the shaft of the complete of the com

PRIESE: Why then we may reasonably expect the returns will be a last quadrupled.

The CHARMAN: Do you think we can compete in the market with the same in the compete and the compete in the compete in the market with the same in the compete and the compete in th

Aug. 12. he No. 1 south le SOUT

The quarterly i The quanta Marketing with the meeting w bly to a o, who had h nine, 41 year sed years. her 89, was nest-book, as usu present were Me R Hawke, John ining adventure The m arried on by a hing for the per enturersgene n other simi this.

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by No. Leath hole being cut in the 27, which also is a point of great interest, and specific were all that could be desired.

the prospects were all that could be desired.

the prospects were all that could be desired.

Saliman would that a call of 58. per share be made, 3s. to meet the debit be Gallman word that a call of 58. per cent. be allowed on the sea and 2s. towards the current costs, and 2s. towards the current costs, and that 5 per cent. be allowed on the sea and 2s. towards the cut of the cost of

SOUTH CARADON MINING COMPANY.

SOUTH CARADON MINING COMPANY.

The quarterly meeting of adventurers was held at the mine on facility last.—Mr. Thomas Kitto (the purser) in the chair.

The meeting was more numerously attended than usual, owing fine meeting was more numerously attended than usual, owing fine meeting was more numerously attended than usual, owing fine meeting was more numerously attended than usual, owing fine meeting was according to the order of into who had held the office of purser since the commencement of into who had held the office of purser since the commencement of into who had held the office of purser since the commencement of into who had held the office of purser since the commencement of sitts. The mine had not only to take the chair but sign the number so, was still able not only to take the chair but sign the number so, was still able not only to take the chair but sign the number so, was still able not only to take the chair but sign the number so, was still able not only to take the chair but sign the similar was still able not only to take the chair but sign the similar of Cornwall, and has been so for a long series mine in the county of Cornwall, and has been so for a long series wire the similar undertakings; indeed, the small number of similar undertakings; indeed, the small substance in the similar undertakings; indeed this simportance of a mine like South Caradon can hardly be over-

terest.
The importance of a mine like South Caradon can hardly be over me importance of the state of t and generally circulated in the town of Liskeard and its neighbourhad. There are 13 engines continually at work, including six
haft and three winding-engines; 24 heads of stamps are kept
haft and the man-engine erected a few years ago, at a cost of about
haft, has been of great service to the men and the adventurers,
haft for the Michael Town has been and the salventurers. of has been of great service to the men and the adventurers, ring as it does an hour a day to each man in his eight-hours core, obably, if Capt. Michael Loam, the old engineer who pa sed away few years ago, could rise from his grave, and revisit South malon, he would be able to say that he had not altogether la-

based in vain.
During the 40 years South Caradon has been at work there has sen an almost unbroken run of prosperity, and still shows all the signs of permanence in its mineral returns. Some of the statistics of this mine are worth notice. In 1837, when the first valuable sure of copper was struck, enough ore was soon sold to cover all reliminary expenses; and in the following year the adventurers did 130 tons, realising 11982. Ten years made a vast difference in the returns, and 2748 tons then realised 16,3884. In 1854 the gross seipts were 39,9874, which allowed of a profit of 13,8264, while a total profits in 1855 amounted to 84,1304, or over 100,0004, for hears' working. At one time the shares touched 4004, per 256th

sel 190 tons, resirving 1 10-25.

returns, and 2748 tons then realised 16,3882. In 1854 the gross expipts were 39,9574, which allowed of a profit of 13,8264, while be total profits in 1855 amounted to 84,1304, or over 100,0004, for the mine, and at the present time are worth about 30, per 512th share (about 61,0004, for the mine). The mine-gine shalt is down to the 140, and the deepest point in the mine is be 30 from surface. There are between 400 and 500 hands employed on the mine. The mine-gine shalt is down to the 140, and the deepest point in the mine is be 30 from surface. There are between 400 and 500 hands employed on the mine. Since the adventurers persevered with it, and were well rewarded. Although the mine is in so small a number of shares, some of the shareholders continue to shall are interest. The late Mr. R. Kitto, of Tredawle, Altarunu (bother to Mr. Elitow, the purser) held 75 shares, and these are still in his family. Mr. Thos. Enow, the present purser, holds 35 shares; St. W. Williams, 20 shares. Altower there are 155 shareholders, holding an average of over three shares each. Clowing is late has been sunk to the 150, and recently they have had an improvement here in the 130, 140, and 150 fm. levels. This part of South Caradon set is grown, and the set of the stream of the set of the stream of the set of the set

of the company.

TILE thought this course was by no means well advised. A reduction of the company.

TILE thought this course was by no means well advised. A reduction disend would have a great effect on the market value of the shares, and y recommended that a 2½ dividend should be declared as usual.—It inseed by the purser that to do this would involve the borrowing of a large cosey from the bankers, and involve for some time to come an expenditerst, &c., at the rate of 40½ per annum. At the first blush it was cirable to recommend no dividend at all, but subsequently, by way of sex. It was suggested.—Mr. WEST was of opinion that under the cirms to dividend should be declared.—It was, however, subsequently almously resolved to declare a dividend of 1½, per share.

OLMAN, in reply to enquiries, stated that the mine had certainly imbee the last meeting, and he was glad to say they were likely to have ore he cade going west.

is going west.

of Mr. Milton, of Liskeard, seconded by Mr. West, a unani-

Listeari, seconded by Mr. W.F.R.; a unani-law was passed to the out going purser, with a strong expression as to him for his long continued and faithful services. nimously resolved that Mr. J. G. Dymond, who had for many istant purser, should be requested to accept the pursership, in note.—Mr. Dymond thanked the adventurers for his election, intended retiring with his uncle from all active duties connected at he had been requested by so many of the adventurers to accept did so, though with great reluctance.

eduate did so, though with great reluctance.

adventurers afterwards dined together, and "Success to South but was one of the early toasts afterwards. Mr. Dymond adon" was one of the early toasts afterwards. Mr. Dymond of the early toasts afterwards. Mr. Dymond e Chairman), in proposing it, said that ores had been raised there thing the last 41 years to the amount of 1,400,000L, and he anticitied south Caradon would be working for generations to come. Settines the returns had been as much as 80,000L a-year, but they docasionally varied. He called attention to a case of specimens is room, which had been recently placed there, and which contained special many of the setting was far from being exhausted. Mr. Dymond further referred to dishibitoward way in which the mine had always been worked, and said it is emarkable fact that during the whole time Mr. Kittow had been purser had never found it necessary even to take a division at any of their meetings. W. Houxax, in responding to the toast of his health, said he was glad to meet what the same that the same tha

Applanes), displanes, and the season of the health, as a successful mining en-

gineer, said he was one of the largest employers in the county, on the other side of the hill, not far from South Caradon, in the Phenix Mines. They had 164 stamp heads at Phenix working regularly, and they should have 100 more at once on the mine if the should be proved the should have 100 more at once on the mine it in should go up 104. Der ton. When he first went to Phenix he was told by the then manager that there was not tin enough on the mine to keep four heads working; but he had persevered, and, although his share in Phenix had cost him 20,000l. before he ever received a shilling, yet he had been repaid all his outlay and had still a very large interest in the two mines—Phenix and West Phenix. He handed to the Chairman for his inspection a certificate which had just been issued since the amalgamation of the two setts, which showed that he held no less than 1760 shares in the amalgamated concern, irrespective of the large interest held by his immediate relations and friends. He was glad they had succeeded in the amalgamation, as they would by this save more than 40l. per month. The only obstruction they had was from a shareholder in Truro, who held 12 shares out of 6000 in Phenix and six shares out of 3000 in West Phenix. It was worthy of notice that although in South Caradon they had upwards of 200 shareholders, yet in Phenix Mines there were only 50. It was a source of great satisfaction to him that he had been to a very great extent the means of employing 1000 men, women, and children in that poor neighbourhood.

It was resolved during the day to present the purser with some mark of esteem.

our neignbournood. It was resolved during the day to present the purser with some mark of esteem, it was resolved during the day to present the purser with some mark of esteem, it has a recognition of is long and faithful services. The meeting was altogether most hearty and unanious.—Wet Briton.

ENGLISH AND AUSTRALIAN COPPER COMPANY.

At the half-yearly meeting of shareholders, to be held on Thurs day, the following report from the directors will be submitted: At the present half yearly meeting of proprietors the directors have to lay before them a statement of the proceedings of the company for the six months ending

At the present nair yearly meeting of proprietors the directors have to may octore them a statement of the proceedings of the company for the six months ending Dec. 31, 1875.

During that period the gross quantity of ore, regulus, precipitate, and rough copper received from various mines was 7662 tons 11 cwts. 1 qr., as against 6481 tons 12 cwts. for the corresponding six months of the previous year. The quantity of ore, regulus, and precipitate smelted at Port Adelaide and Newcastle Works was 6755 tons 9 cwts. 1 qr., as against 6490 tons 6 cwts. 2 qrs.

The quantity of copper made was 1393 tons 9 cwts. 2 qrs. 26 lbs., as against 1275 tons 11 cwts. 2 qrs. 3 lbs.

And the quantity of copper shipped from and sold in Australia was 1384 tons 8 cwts. 1 qr. 19 lbs , as against 1258 tons 6 cwts. 2 qrs. 27 lbs.

The net earnings of the company's wharf at Port Adelaide were 24371. 5s. 3d., as against a total of 1894. 1ls. 11d.

At the beginning of the year copper was firm at 881. to 891. per ton, and although the market was without animation, yet the statistics warranted the expectancy of a fair upholding of prices.

Early in March, however, a public sale by auction of 2000 tons Australian copper was advertised for the 28th of that month, and sales in the usual course became difficult, and prices drooped. The result of the sale established a fall of full 44. to 54. per ton, reducing the quotations to 832. and 844. This was followed by a second sale, by public auction, of 1843 tons Australian copper, on June 27, resulting in a further fall of 54. per ton.

Since then the price of copper has further declined, and the present quotations are from 764. to 771, per ton.

The statement of the six months' working to Dec. 31, 1875, shows an estimated profit of 18684. 8s. 94., to which has to be added 7384. 0s. 3d. balance on June 39, 1875; making together the sum of 21064. 7s., which the directors propose to carry forward to the close of the year's accounts.

The reserve fund now stands at 12,5444. 8s. 1d.

FOREIGN MINING AND METALLURGY.

The French iron trade presents scarcely any change. The Custo ms returns available upon the subject do not exhibit brilliant results; nevertheless, the exports show a slight improvement, having amounted in the first six months of this year to 106,000 tons, as compared with 85,000 tons in the corresponding period of 1875. Pig and iron are still selling at about the same rates. As regards the French coal trade, the extraction has been a good deal reduced, the working staffs being largely employed upon exploratory works. The opening of the winter season is regarded with very varied feelings. There is little doing for the present upon the Paris coal market; from some of the mining districts a rather marked downward tendency is reported.

The continental conter markets have presented no very striking.

ward tendency is reported.

The continental copper markets have presented no very striking feature. At Paris, Chilian in bars has made 77l. per ton; ditto, ordinary descriptions, 75l. per ton; ditto, in ingots, 78l. per ton; English tough cake, 78l. per ton; and pure Corocoro minerals, 74l. per ton. At Marseilles, red Tokat has brought 78l. per ton. At Rotterdam, the quotation for Drontheim has been 50 to 52 fls., and for Russian crown 51 fls. Since a recent sale of the Dutch Society of Commerce tin has been in pretty good demand in Holland to need Commerce tin has been in pretty good demand in Holland to meet the requirements of consumption, and some transactions have taken place in Banca at 43\(^3\) to 44 fls., and in Billiton at 43 fls., with delivery at the October sale. At Paris. Banca, delivered at Havre or Paris, has made 78l.; Straits, ditto, 78l.; and English, delivered at Havre or Rouen, 76l. per ton. Lead has regained firmness; 15,000 saumons of Spanish lead arrived at Marseilles last week. At Paris, French lead, delivered at Paris, has made 20l. 12s. per ton; Spanish, delivered at Havre 20l. 8s. per ton; English ditto 20l. 12 per ton;

French lead, delivered at Paris, has made 201. 12s, per ton; Spanish, delivered at Havre, 201. 8s, per ton; English, ditto, 201. 12s, per ton; and Belgian and German, delivered at Paris, 24l. per ton. The zinc markets have remained quiet. Silesian zinc, delivered at Havre, has made 23l. 16s. per ton. At Marseilles the quotation for Vieille Montagne zinc in sheets has been 32l, per ton.

The Belgian iron trade presents the dulness and inaction which it usually exhibits during the dead season. The substitution of iron sleepers for wooden ones appears to be making little or no progress upon the Belgian lines, but in Germany and Austria the Ministers of Public Works are stated to have given their authoritative approval to iron sleepers. Official Belgian returns show that in the first six or Public works are stated to have given their authoritative approval to iron sleepers. Official Belgian returns show that in the first six months of this year Belgium imported 356,000 tons of minerals and limailles, against 450,000 tons in the corresponding period of 1875, and 355,000 tons in the corresponding period of 1874. The imports of rough pig and old iron into Belgium in the first half of this year amounted to 110,000 tons, against 74,000 tons in the first half of 1875, and 77,000 tons in the first half of 1874. Wire, rails, plates, pails and other worked iron ware also imported into Belgium in the 1875, and 77,000 tons in the first half of 1874. Wire, rails, plates, nails, and other worked iron were also imported into Belgium in the first half of this year to the extent of 7000 tons, against 8000 tons in the corresponding period of 1875, and 17,000 tons in the corresponding period of 1874. The imports of steel in bars, sheets, or wire into Belgium have declined to the extent of nearly one-half during the two last years; in the first half of 1874 these imports amounted to 4800 tons, while in the first half of 1875 they sank to 2300 tons, and in the first half of 1876 to 2170 tons. The exports of minerals and limailles from Belgium in the first half of this year amounted to 68,000 tons, against 82,000 tons in the corresponding period of 1875, and 42,000 tons in the corresponding period of 1875, and 42,000 tons in the corresponding period of 1875. amounted to 05,000 tons, against \$2,000 tons in the corresponding period of 1875, and 42,000 tons in the corresponding period of 1874. The exports of rough pig and old iron amounted to 6000 tons in the first half of this year, against 8000 tons in the corresponding period of 1875, and 9000 tons in the corresponding half of 1874. The exports of miscellaneous iron rails, plates, wire, &c., amounted in the first half of this year to 41,000 tons, against 37,000 tons in the corresponding half of 1875, and 38,000 tons in the corresponding half of 1875, and 38,000 tons in the corresponding half of sponding hair of 1675, and 35,000 tons in the corresponding hair of 1874. The exports of steel in bars, sheets, or wire amounted in the first half of this year to only 1700 tons, against 4300 tons in the corresponding period of 1875, and 2400 tons in the corresponding period of 1874. The Berg and Mark Railway Company has invited tenders for the supply of 1000 puddled steel tyres.

Notwithstanding the low rates at which Belgian coalowners exhibit a disposition to do business consumers still maintain an atti-

hibit a disposition to do business, consumers still maintain an attitude of great reserve upon the Belgian markets, as they do not apparently consider the movement portant contracts. Sales and deliveries are made in very small quantities from day to day, and at some points coal mining industry appears, indeed, to be almost completely extinct. Hope alone sustains Belgian coalowners, but some of them are engaged, nevertheless, upon exploratory and preparatory works in anticipation of a revival in affairs. Official Belgian returns show that in the first half of this year coal was imported into Belgium to the extent of 372,000 tons, against 325,000 tons in the corresponding period of 1875, and 165,000 tons in the corresponding period of 1874; thus, in two years the imports have nore than doubled. Great Britain sent Belgium 83,000 tons of coal in the first half of 1874; in the corresponding period of this year the imports from the same quarter rose to 182,000 tons. Prussia sent Belgium 19,000 tons of coal in the first half of 1874; in the corresponding period of this year she sent 78,000 tons. These totals possess a certain eloquence, showing as they do that the competition of foreign coal upon the Belgian markets is always increasing. The imports of coke into Belgium are also increasing. Thus, Prussia sent Belgium 160 tons of coke in the first half of 1874; in the corresponding six months of this year she sent 8000 tons. The total quantities of coke imported into Belgium from Prussia, England, and France in the first half of this year amounted to 10,300 tons, as compared with 7700 tons in the corresponding

period of 1875, and 4300 tons in the corresponding period of 1874. If the imports of coal into Belgium are increasing, the exports of coal from Belgium present much about the same importance as in former years. Thus, in the first six months of 1874 Belgium exported 1,779,000 tons of coal; in the first half of 1875, 1,930,000 tons; and in the first half of 1876, 1,802,000 tons. The exports of coke from Belgium amounted to 220,000 tons in the first half of 1874, 364,000 tons in the first half of 1875, and 286,000 tons in the

first half of this year.

first half of this year.

Some interesting particulars concerning the progress of Algeria have been communicated by General Chanzy to the French Budget Committee. Since 1872, the Europern population has rapidly increased, greatly to the advantage of Algerian agriculture. French and English companies have during the past ten years nearly doubled the output from the iron mines, built villages, and constructed roads and ports. Agricultural machines have been extensively introduced The events in Turkey have not affected the Arabs, who still remember the results of the revolt of 1871, which cost them 100,000 hectares of land, all their weapons, and 36,000,000 francs indemnity. The revenues, which barely amounted to 15,000,000 francs in 1871, have now attained to 28,000,000 francs. Notwithstanting the general stagnation of trade, the exports continue to increase. stagnation of trade, the exports continue to increase

MINING AND METALLURGY AT THE AMERICAN INTERNATIONAL EXHIBITION-No. IV.*

remaining colony in Australia, which is represented in the Exhibition, is what is known as South Australia—a name which has a tendency to mislead, for the country occupied by this province is a belt of land between 600 and 700 miles in width, and extending through the island for 1200 miles or more, from Adelaide in the South to Palmerston in the North, with a population averaging one person to every 4 square miles of area. It would appear that the title of Central Australia would be the more appropriate one. The development of the mineral resources of South Australia is neces sarily yet in its infancy, but the progress already made is set forth by samples of iron and copper ores, some of which appear to be superior. Among the copper ores exhibited is quite a handsome mass of malachite. The ores of bismuth also appear to abound in the colony. A case of auriferous quartz shows the character of the gold, and if we could believed it contained samples of the run of the reins we would approprie gold mining in South Australia the way. the veins we would announce gold mining in South Australia the way to obtain wealth. While no large nuggets or elaborate specimens are displayed, the average of the case is a splendid paying ore, too good not to have been selected.

The triangular island lying south of the continent of Australia, which we as a schoolboy knew as Van Dieman's Land—a small territory inhabited only by cannibal natives and wicked convicts ritory inhabited only by cannibal natives and wicked convicts—shows in the Exhibition a collection of products of intense interest, and demonstrate that the majority of the 120,000 people who inhabit the island are engaged in raising the fine live stock for which the island is celebrated, cultivating the superior cereals or developing the mineral resources, which are evidently extensive and valuable. In the Tasmanian court are superior specimens of raw and calcined iron ores, some of which are large masses. The coal exhibited does not appear to equal in quality that produced in the other Australasian colonies, but some very fine slate sare displayed. Marbles and limestones are also in the collection, and fire-clay adds to the proclaimed advantages of the island for iron production. Besides the exhibit of fuel, ores, fluxes and refractory material, there sides the exhibit of fuel, ores, fluxes and refractory material, there is displayed pig-iron bearing upon it the stamp of "The British and Tasmanian Charcoal Iron Company." and castings of fair character made in Hobart Town. Piles of tin ore and ingot tin illustrate the large deposits of this metal in Tasmania, and specimens of ore from the lately discovered bismuth lode add interest to the collection. The gold output, which is small, is but feably represented. ection. The gold output, which is small, is but feebly represented

lection. The gold output, which is small, is but feebly represented by some auriferous quartz.

Twelve hundred miles to the east of the Australian continent lies a colony of Great Britain, sometimes called from its advantages and size (about the same as the British Islands) the Great Britain of the South, but more familiarly known to us as New Zealand. The healthful at present are populated by about 400,000 whites and 50,000 aborigines, and possess remarkable mineral wealth. Following the example of Queensland and New South Wales, the New Zealand Commission illustrate the gold exported from 1862 to 1875, aggregating over \$150,000,000, by a rectangular prism 4½ ft. square 23 ft. high. This trophy is an improvement on all the other gold trophies, as by black lines it is divided up into a series of sections representing the export of each year, thus giving at a glance all the fluctuations in production. The front of the New Zealand court is adorned with cases containing some very fine auriferous court is adorned with cases containing some very fine auriferous quartz, and samples from various alluvial gold fields arranged upon watch crystals or ebony cups. There are also bars of gold weighing about 10 ozs., bars of chloride of silver, obtained by treating ores by the chlorine refining process, and models of gold bars as prepared for export, weighing from 25 ozs. to over 30 lbs. Copper ores, galena, zinc-blende, stibnite, and other ores of antimony and manganese are included in the mineralogical display. Magnetic manganese, are included in the mineralogical display. Magnetite and a goodly variety of hematites demonstrate the value of iron deposits, and mineral paints and chrome ores add interest to the exhibit. Among the other natural products shown are rock oil, petro-leum, soapstone, fire-clays, fire-brick, &c. Bars of iron and steel, the product of New Zealand ores, attest to their commercial value. The islands seem to be highly favoured in mineral fuels of good quality and variety. Among the specimens exhibited are the following:—A rich bituminous coal, from which a good coke can be made: a fair semi-bituminous coal; a glance coal; a pitch coal (approaching in appearance albertite); a resinous brown coal; an antiracite coal, claimed to contain 90 per cent. of carbon; and some lignites. An array which, if convenient to the ores and fuels, and within reach of chapt transportation, should do much towards dewithin reach of cheap transportation, should do much towards de-

within reach of cheap transportation, should do much towards developing the metallurgical future of these islands.

All of these displays from Australasia teach how little we know of the various nations of the earth, their people, resources, and requirements; and the contributions from the South Pacific show us that our Antipodes, as well ourselves, can offer inducements to emigration, and that in distributing mineral wealth Nature has been careful to thoroughly divide it woon all parts of the earth.

gration, and that in distributing mineral wealth Nature has been careful to thoroughly divide it upon all parts of the earth. The southern extreme of Africa is well represented in the space assigned to the Cape of Good Hope, a colony of Great Britain covering an area of nearly 300,000 square miles, and peopled by 200,000 whites, and double that number of Kaffirsand Hottentots. The display of fuels, though occupying but little space, is entertaining and instructive, for quite a variety of coals are exhibited, each accompanied by its coke and ash. To us this means of exhibiting fuels is remarkably appropriate, and is worthy of imitation for by an area. panied by its coke and ash. To us this means of exhibiting fuels is remarkably appropriate, and is worthy of imitation, for by an examination of the physical properties of coals, their cokes, and the resultant ash an intelligent opinion of the commercial value of the fuel can be formed. Copper ores and ingots, lead ores, iron ores, and a received a received of the fuel coals. and a remarkably pure specimen of black oxide of manganese are features of the collection contributed from the Cape of Good Hope. The diamond diggings are illustrated by specimens of the gems with the accompanying stones; and photographs of machinery and processes employed in the washing. Among the natural products displayed is saltpetre; as far as we have examined the displays the first native representation of this prominent compo

of gunpowder.
In the exhibit of the Seychelles Islands is a remarkably pure piece of plumbago carved in the shape of an elephant but we were unable to learn whether or not the mineral was a product of the islands.—Iron Age (New York).

No. III. appeared in the Mining Journal of July 29.

BURNING ANTHRACITE COAL DUST.—In an address delivered at the recent meeting in Philadelphia of the American Institute of Mining Engineers, Mr. Franklin B. Gowen stated that in the preparation of anthracite coal for the wants of the market it is broken into different sizes, by which a vast amount of culm is produced, which heretofore has been considered entirely useless, so that there is now left in the districts in which he is particularly interested almost 40,000,000 tons of this waste material lying in huge mountains, some of which, if they remain to future ages, would probably puzzle the geologists to account for. This vast amount of fuel, containing in itself as much carbon as the most merchantable coal, has heretofore been considered useless. Ecveral attempts have been made to introduce the French and Belgium methods of converting it into artificial fuel by admixture with gelatinous substances, and compression by mechanical means, but the cost of this process has been atleast \$1 per ion, and heretofore, except for domestic purposes, and at shipping ports, where there is an accumulation of this dust near to market, they have been practically useless for any commercial purpose. To remove the difficulty Mr. John E. Woot in has invented a plan of using this anthracite dust as a steam fuel, both in stationary and locomotive engines, without any admixture with other substances, and without any compression into blocks. The coal dust or culm, in its natural state, is thrown into the furnace, and a result obtained which is nearly, if not quite, equal to that which is obtained from merchantable coal itself. Its order to secure perfect combustion of this fuel, on account of the closeness with which it packs, it is necessary that the draught of air should be greater than that required for larger sizes of coal line sale-pit beneath the fire is entirely closed, except at one place which admits the pipe through which the blast is forced. The bottom of the fire-box, instead of being a grate, is composed of perforated sheet-iron, resting upon supports sufficiently strong to sustain it. The blast is produced by a small jet of steam forced through an orifice not exceeding the 20th part of a square inch. This jet of steam blown through the orifice is introduced into a pipe, which may be described in shape like the two frustums of a cone joined at their narrow diameters. The vacuum produced by this blast draws after it an enormous body of air, which furnishes afficient oxygen to 40,000,000 tons of this waste material lying in huge mountains, some

WELL BORING APPARATUS.

The sinking of Artesian wells involves two distinct operationsthe boring and the clearing. The boring is effected by means of a special instrument, the trepan, which is inserted into the sounding hole, and the falling blow of which frequently and rapidly repeated gradually augments the depth of the well. The detritus, sand, earth, or broken rock, proceeding from this work is then withdrawn from the well by a ladle. These two operations are alternately effected, the well by a ladle. These two operations are alternately effected, and in order to effect the boring all the clearing apparatus has to be removed from the well, which occasions a great loss of time. In order to remedy these inconveniences Messrs. Canard and Moullbera, of Boulevard de Strasbourg, Paris, have constructed a new apparatus, the object of the action of which is to unite into one and the same operation the boring and the clearing of the well. This apparatus is distinguished by a special combination of the trepan with the ladle. It consists of a long stirrup with four branches, in the centre of which is fixed a large hollow tube provided with helices. The four branches are united at their summit by a socket united with the rod of the apparatus, and at their base are ter united with the rod of the apparatus, and at their base are ter minated by forks, in which are fixed strong teeth or knives executing the boring. At each blow of the trepan the water contained in the well, and proceeding from infiltrations, offers under the lower surfaces of the helices a certain resistance, which has the effect of imparting a turning movement to the apparatus, so that the teeth do not always strike at the same place. Lastly, the clearing is effected automatically by means of the tube with helices forming a ladle. the base of which is arranged with a valve opening under the pres sure of the pounded materials.

The several arrangements which constitute the invention of Messrs. Canard and Mouillera consist in applying the helix to the drill, in dispensing thus with the stiff rods, nippers, or click hooks in ordinary use at the present time, the automatic rotary motion of the drill no longer necessitating this stiffness, and in making the drill act by means of a cable instead of the stiff rods, the pitch of the helix, its shape, diameter, and height, varying according to the weight of the drill, the diameter of the well to be sunk, and the nature of the soil that has to be crossed.—Secondly, in combining with the drill a central tube, which serves as a bit for removing the cuttings as they are produced by the action of the drill.—And, thirdly, in combining with the drill a case, frame, or guide above the drill, by means of which the drill is prevented from turning aside, and a vertical boring is obtained. Thus, the improved apparatus is composed substantially of a drill, in the centre of and above which is adapted a tube serving as a bit, and which is provided at its lower part with a valve, which opens to allow the cuttings formed by the working of the drill to enter as they are formed into the nary use at the present time, the automatic rotary motion of by the working of the drill to enter as they are formed into the tube of a double conical helix, which winds round the bit or tube, and a guide apparatus consisting of a case or frame above the drill or its framework, and the diameter of which is about 4 in. (about 10 centimetres) smaller than that of the drill, in order to leave space for the neces-ary passage of the tubes which it may be required to place for the hollowing of the well.

place for the hollowing of the well.

The apparatus is suspended to a flexible metallic cable by a double-linked chape, by means of which a regular and continuous rotary motion may be imparted to it. The apparatus works in the water, its fall can be regulated between about 4 and 12 in. (10 to 30 centimetres), according to the hardness of the ground to be gone through. The depth of the water in which the apparatus works should be from about 8 to 16 ft. (about 2 metres, 50 centimetres to 5 metres), according to the diameter of the hole to be bored, that the drill may be able to turn suitably. When the drill is raised again it turns a be able to turn suitably. When the drill is raised again it turns a little from left to right, in consequence of the special arrangement of the helices round the tabe and the resistance of the water on these helices. The drill drops upright again by reason of the shape and weight of the helix. The improved apparatus is considered to present incontestable advantages over all used up to the present time for the same purpose. The doing away with the stiff rods allows of realising a considerable economy of time and workmanship required in the use of these stiff rods, the cuttings can thus be drawn out as soon as they are produced the horizon and cleanesing drawn out as soon as they are produced, the boring and cleansing of the well taking place simultaneously; the drill can be raised again to the light in relatively a very short space of time to empty the tube or bit containing the cuttings; in short, a continuous work can be done with a single machine.

can be done with a single machine.

It will thus be seen that the helix arrangement which at each blow produces the automatic rotation of the trepan has enabled the inventors to effect an important improvement in the mode of sus-pending the apparatus. This improvement, which is one of the pending the apparatus. This improvement, which is one of the essential characteristics of the invention, consists in replacing by a metallic flexible and continuous cable the ordinary suspension rod composed of rigid elements, which it is necessary to dismount at each removal of the trepan. Instead of this long and laborious manœuvre a simple rolling or unrolling action is sufficient to induc the working of the boring and clearing of the well. The work piercing the well will thus be expedited in a very remarkable mann and an important economy of time and cost will be effected.

MOTIVE-POWER - Messrs. J. H. T. ELLERBECK, of Southport, and J. M. Syers, of Altrincham, have patented an improvement in the apparatus and production of motive-power. One volume of oxygen combines with two of hydrogen with explosive violence. It is to combines with two of hydrogen with explosive violence. It is to utilise the force of this explosion for mechanical purposes that this invention is designed; the two gases can be made in any suitable manner and combined. The inventors prefer, however, to obtain them by the direct decomposition of water into its component parts by placing two plates of platinised foil in a suitable vessel of water, connected to the two poles of a powerful galvanic battery or a series of batteries; these gases can be collected separately at their respective electrodes, and afterwards mixed, or can be allowed to respective electrodes, and afterwards mixed, or can be allowed to mix at once. In order to obtain power the mixture of the two gases are exploded by means of an electric spark in a chamber, thus driving a piston, as in other gas engines. The quantity of gas used, and consequently the power, can be regulated by means of the batery, the plates being raised and lowered into the acid by the ordina y ball governor, or any other form of governor that may be applicable, or by cutting off the connection between the wires from the batteries, by which also the engine can be stopped at a moment's

notice. When not in actual use the plates of the battery are lifted entirely out of the acid, so are not wasted unnecessarily. In arranging the engine the electrodes are usually placed in a chamber of water immediately below the cylinder and open to it, the gases then are generated immediately below or adjacent to the piston, and are fired by an electric spark. The motive power engine is important where an intermitent power is wanted. It will thus be found very valuable for use in rock-drilling, in tunnels where steam and pneumatic apparatus are inconveniently bulky, and in the case of steam a nuisance; also in pile driving machines and hammers resembling steam-hammers, where a sudden explosive force is required, but is also applicable wherever engine-power is wanted.

UTILISATION OF PETROLEUM AND NATURAL GAS IN BLAST FURNACES.

The value of petroleum as a smelting fuel depends greatly on its composition and upon the completeness with which it is burned When the combustion of petroleum is complete, carbonic acid and water being the results, the temperature is 1276 6° Fahr. greater, or 4478°. While the incomplete combustion or petroleum may thus while the incomplete combustion or petroleum may thus serve for the fabrication of iron, it becomes obviously desirable to insure the complete combustion. The most important question to resolve, then, is what quantity of petroleum is necessary to produce a ton of iron (2240 lbs.); this will naturally vary according to the nature of the ore employed. In the north-western part of Pennsylvania the cold-blast furnaces absorb about 90 bushels of Connersville coke, containing 3260 lbs. of carbon, to produce 1 ton of iron with magnetic oxides (or about 1.43 tons of coke to 1 ton of iron). The own necessary to produce 1 ton of iron generally as \$3.50 ks. of coke to 1 ton of iron). The ore necessary to produce 1 ton of iron contains 853 lbs. of oxygen, which require 640 lbs. of carbon to effect transformation into carbonic oxide. With these data the author finds that the consumpcaroonic exide. With these data the author finds that the consumption of petroleum per ton of iron is for reduction, 256 lbs.; separation of the oxygen from the metal, 239 lbs.; fusion, waste, &c., 157 lbs.: total, 652 lbs., or about 97½ gallons. It has been proposed to practically utilise petroleum in blast furnaces by vapourising it by means of superheated steam, and then introducing it into the combustion zone with the blast. Thus employed, however, the hydrocarbon is but incompletely consumed, and the temperature practically gained is not sufficient to inverse the advantagence works. practically gained is not sufficient to insure the advantageous working of the furnace.

To avoid this difficulty, Mr. Charles Plagge has devised a new

apparatus whereby the influx of petroleum is divided, so that there is led into the combustion zone only that portion necessary to meet the reduced iron and the scorice, while the remainder of the petroleum, which roasts, reduces, and carbonises the metal, is conducted into the upper or reducing zone of the furnace. The petroleum and the blast necessary for roasting are led by a central tube, which plunges into the reduction zone to a depth determined by experiment. In order to protect this tube from the heat it is enveloped in a larger tube. There is thus formed an annular chamber for the circulation of hot and cold air, which enters from above, and leaves the outer tube by special apertures to pass into the furnace a little below the upper surface of the charge, a height at which the petro-leum enters the reducing zone; this air serves, in addition to pre-serving the tube, to burn all the gases and vapours arising from the oil, which have not been utilised by the reduction and fusion of the iron. The free oxygen which enters the furnace above the zone of reduction oxidises the injurious impurities contained (sulphur, phos phorus, &c.), and the heat produced contributes in expelling the car bonic acid and combined water of the ore, and to heat the latter be fore its entrance into the reducing zone.

Mr. Plagge claims that by this means more iron can be produced daily, owing to the large quantity of ore with which furnaces can be charged through the absence of solid fuel; and also that the metal produced is of greater purity, owing to the elimination of impurities produced is of greater purity, owing to the control of the metal reas above noted, before it enters the reduction zone. The metal reas above noted, before it enters the injured by deleterious matter The metal re duced at low temperature cannot be injured by deleterious matters in its passage from the zone of reduction to that of fusion since it encounters only neutral gases, but very slightly oxidising or reducing in nature, and since it is submitted to the purifying action of carbonic acid, which transforms into sulphurous, silicic, and phosphorous acids the small particles of sulphur, silicon, and phosphorus which the reduced metal may have absorbed.

MANUFACTURE OF TIN AND TERNE PLATES.

Some important improvements in preparing black plates in con nection with the manufacture of tin and terne plates have been invented by Mr. GEORGE NURSE, of Pen-y-Van, near Pontymister.
The improved treatment consists in placing black plates in a bath in series that can be removed into a second bath, and from that to a third or drying chamber, this treatment being carried on after the plates have been annealed. The first-named bath contains a revolv-ing platform, on which sectional racks are placed during the rotation each sectional rack having (say) 15 plates put into it, the plates with the sectional rack being arranged tangentially in the rotating one that the liquor (pickling) may flow between and thoroughly wet to prepare or pickle the surfaces. From this first bath the sectional racks with plates (pickled) are removed into a neighbouring bath, similarly provided with a rotating platform, and containing water only to wash off the excess of acid that may be in the pores of the plates from the first bath. The plates with the sectional racks are removed from the second bath (water) and inserted into a vessel similarly fitted, this vessel being heated that the plates may be dried of all majeture. The ligour into first paged bath is bested by steam of all moisture. The liquir in the first-named bath is heated by steam pipes arranged in a coil at the bottom, or in other convenient manner the second bath being kept heated by the same or similar means. The drying chamber is preferably heated by fre direct or by gas flames, the heat of each bath being regulated to suit the plates under operation. The plates are then removed from the sectional racks and sent to the cold rolls for rougheing, as is ordinarily and sent to the cold rolls for polishing or surfacing, as is ordinarily done, the sectional racks being returned for re-charging with the first

In carrying out the invention two tubs, or a composite tub or vessel, is employed, between the walls of which a platform can be rotated slowly in a continuous manner or intermittently by me-chanism or by hand by an attendant pushing the frame round by its The frame is mounted upon handles, which are within his reach. names, which are within his decal. I have a mounted a contral upright stepped upon a cross beam, and there is a pipe nished with a tap for supplying steam to a coil within one of tubs, which steam escapes through orifices into and among the vit riol and water that is within the space between the tubs to heat the liquor therein, and to maintain the desired agitation of it that the plates as black plates to be pickled or deprived of superfluous oxide that are placed upon the rotating or revolving platform can be thus

end, so that each of them travels nearly the full circle of ro end, so that each of them travels nearly the full circle of rotains. The liquor in the travel of the platform becomes agitated at each movement, and passes up between the plates to thoroughly we have act upon to pickle them. The cages as they are taken out are put upon to pickle them. The cages as they are taken out are put upon to prevent loss and contamination of the water; they tank or tub to prevent loss and contamination of the water; they are then put into the water tank or tub at the front for the water; they process, and taken out at the back ready to be removed to the dring chamber, and from there to be annealed; or they may be taken usual manner. The plates after being cold rolled are annealed to soften them, and then they are passed through the white pickling operation, the drying off either being done in a drying chamber a before, or the plates are put direct into cold water to make to plates ready for being tinned or coated.

ECONOMY OF FUEL IN ENGINES.

Mr. W. Gray Harbower, writing to the "Glasgow Henld" says that a series of experiments have been brought to a temporary conclusion at Portsmouth, the results of which are of the higher interest to engineers and users of steam-power. The experiment interest to engineers and users of steam-power. The experiments were for the purpose of testing the economy of fuel effected by M. Aarchant's invention for returning the "exhaust steam" of engines to the boiler, to which attention was recently called. To tests were conducted on a condensing-engine of 40-horse power use at the Dockyard at Portsmouth, which had been submitted for the purpose of the experiments by the Admiralty authorities. To this engine had been allixed a set of Mr. Marchant's "Stage Process Steam-Pumps," the action of which in condensing-engines may be thus briefly explained: A double-acting pump takes off from the exhaust steam of the lower pressure cylinder the same volume of steam as a mitted into the high pressure cylinder at each stroke. This steam is received a reservoir above the pump, and is then forced by one stroke of a similar double acting steam-pump into a reservoir of half the size. By the second stroke officers, the steam is again compressed by half its volume, and forced tack into a pump, and it is therefore returned to the boiler in the form of vapour. All being bumps, which would be incurred were the steam returned in its some state is thus avoided. The trials which have been made at intervals, as converted in its some

pumps, and it is therefore returned to the boiler in the form of vapou of the pumps, which would be incurred were the steam returned state is thus avoided. The trials which have been made at intervals, as opportunity of the past week or two, were conducted under unfavourable conditions affected the result; but, not withstanding, these have given the higher the patent steam pump attachment, during which time the expendit of coal gave a mean indicated horse power of \$5.747. On the follengine was run for the same number of hours, with the steam-pump action, when the expenditure of \$1.54 bs. of coal resulted in an horse power of 1c4 123. Thus, with 13 bs. less expenditure of fuel power was effected to the extent of 20 per cent. The power expenditure of the best in the power was effected to the extent of 20 per cent. The power expenditure of the best indicated horse power. This trial may, therefore, be said effected economy by the use of the pumps of over 20 per cent, of for the insta tatempt on Mr. Marchants part to affix his apparatus to a than his own experiment dengines, the application was, of necessity detracted from the value of the result attained, it was four structed for a boiler pressure of to him, the inventor had made a culation in regard to the capeity of the pumps. These were calculation in regard to the capeity of the pumps. These were calculation in the part of a boiler pressure of 10 bs., but permission was only at 70 bs.

en this is rectified, and the pumps are of the required capacity sults will be doubled, and the inventor is confident of attaining per cent. of fuel. A tabular statement of the results of the true. While Mr. Murchant's invention is applicable to any engine

results will be doubled, and the invention is applicable to any engine feither. So per cent. of fuel. A tabular statement of the results of the trial is in per tion. While Mr. Murchant's invention is applicable to any engine (either on gor of high pressure) with an ordinary boiler, its perfect application required for the product of t

ELECTRICITY AS A MOTIVE POWER.—The free Monday evening lecture at South Kensington was given by Professor Carey Fosts, F.R.S., on "Electricity as a Motive Power." Dr. Siemens, E.S., took the chair. Professor Foster first showed with a number of

F.R.S., on "Electricity as a Motive Power." Dr. Siemens, F.R.S., took the chair. Professor Foster first showed with a number of experiments that by very simple arrangements light bodies can be moved by electricity. Indeed, the usual mode of testing whether a body is electroscope and the galvanometer are founded. The way in which a bard of electroscope and the galvanometer are founded. The way in which a bard of iron can be converted into a magnet by passing a current through a wise twist around it was illustrated for the purpose of showing how the iron may be meticed and demagnetised at will, and how, by arranging that this shalls down an automatic way, it is possible to contrive continuous motion. Abard from pended across the poles of a horseshoe-shaped mass of iron, which can be magnised and demagnetised at pleasure, cun be made to revolve. If suspended tight angles to the poles it will swing round to set with the poles, and if it at this such the iron be demagnetised, the bar, instead of setting, will swing on. By again once magnetising the iron the impotus of the bar is increased, and by repost this rapid rotation may be secured.

An apparatus based on this principle, with cross magnets, was shown two, which had sufficient power to drive two small pumps lifting water. Smedii C. Wheatston'e apparatus, based on the same principle, were also enhanced the summary of the summary remains to be invented, we can say that, so far no no reason to believe that electricity will be r. There is always power lost by the inverse be done to produce electricity, and this can be ing that power directly. The cost of the coal to 1do a certain research. ork directly in a steam engine upersede steam. ent on coal doing work dire pe to electricity to supersede

CHEMICALS, MINERALS, AND METALS, - (Messrs. J. Berger that are placed upon the rotating or revolving platform can be thus prepared by the liquor. The black plates are arranged in single orders between rails or ribs of a separate cage or sectional rack composed of a base rail and the ribs, one of which forms a handle, by which the cage and the plates can be lifted in and out of the tub. There is a board on the end of the tub on to which the cages can be temporarily placed after the black pickling has been completed, and previous to the cages with the plates being inserted into the next or adjoining tub, which is provided with a revolving platfirm, and supplied with water only heated by steam from a coil as described for the other tub, the heated water in the second tub being used for washing off or removing any excess of nacid there may be upon the plates after the pickling operation; the cages with the plates are then removed into a drying room, or upon an below by gas or other agent, or, as before mentioned, sent wet to the annealing furnace.

In the treatment of black plates for the pickling process the plates are arranged in the cages or sectional racks, one of which is them dropped into the first tub on the platform, an partial rotation is given to the frame, and another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then another charged cage or rack is placed in, another partial rotation is effected, and then an Hydr

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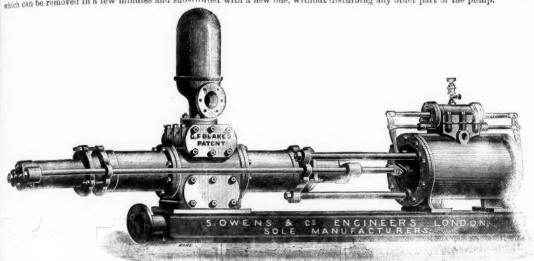
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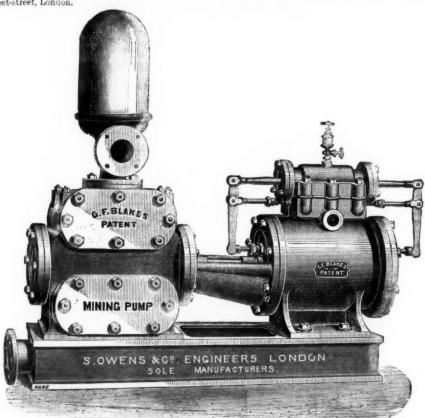
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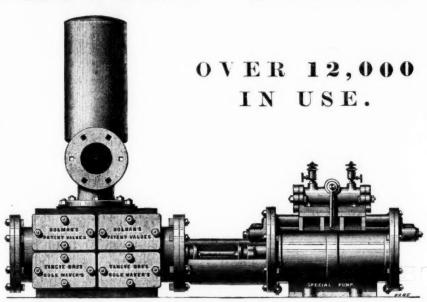


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| Diameter of Steam CylinderIn. | . 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 10 |
|-------------------------------|-------|--------|--------|---------|-------|---------|--------|--------|--------|-------|-------|--------|---------|-------|-------|-------|-------|------|--------|-------|---------|--------|-------|-------|--------|--------|----------|
| Diameter of Water CylinderIn. | 1 1 2 | 1 2 | 3 | 4 | 3 | 4 | 5 | 3 | 4 | 5 | 6 | 3 | 4 | 5 | 6 | 7 | 4 | 5 | 6 | 7 | 8 | 5 | 6 | 7 | 8 | 9 | 5 |
| Length of StrokeIn. | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 1 | 12 1 | 12 | 12 | 12 | 12 | 12 | 12 | 18 | 12 | 12 | 12 | 18 | 24 | 12 |
| Gallons per hour | 680 | 815 | 1830 | 3250 | 1830 | 3250 | 5070 | 1830 | 3250 | 5070 | 7330 | 1830 7 | 250 5 | 070 7 | 7330 | 9750 | 3250 | 5070 | 7330 | 9750 | 13,000 | 5070 | 7330 | 9750 | 13,000 | 16,519 | 5070 7 |
| Price£ | 16 | 18 | 20 | 25 | 2210 | 27 10 | 32 10 | 0 25 | 30 | 35 | 40 | 30 | 35 4 | 10 4 | 45 | 50 | 40 | 45 | 50 | 55 | 65 | 50 | 55 | 60 | 70 | 85 | 55 |
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| Diameter of Steam CylinderIn. | 10 | 10 | 10 | 10 | 10 12 | 2 12 | 12 | 12 | 12 | 12 | 14 | 14 | / I | 4 | 14 | 14 | 4 | 14 | 16 | 16 | 16 | 1 | 16 | 16 | 18 | 18 | 18 |
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| Length of StrokeIn. | 12 | 18 | 24 | 24 | 24 18 | 8 18 | 18 | 24 | 24 | 24 | 24 | 24 | 4 2 | 4 | 24 | 24 | 4 | 24 | 24 | 24 | 24 | 2 | 24 | 24 | 24 | 24 | 24 |
| Gallons per hour 9 | 750 | 13,000 | 16,519 | ð 20,0° | 00 73 | 30 9750 | 13,000 | 16,519 | 20,000 | 30,00 | 0 975 | 0 13,0 | 00 16,5 | 19 20 | 0,000 | 30,00 | 00 40 | ,000 | 13,000 | 16,51 | 9 20,00 | 0 30,0 | 000 4 | 0,000 | 16,519 | 20,000 | 30,000 4 |
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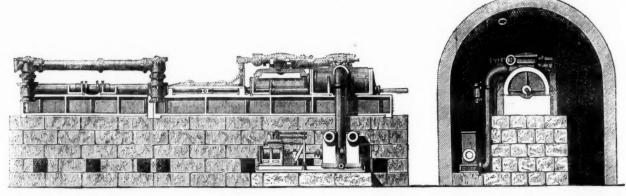
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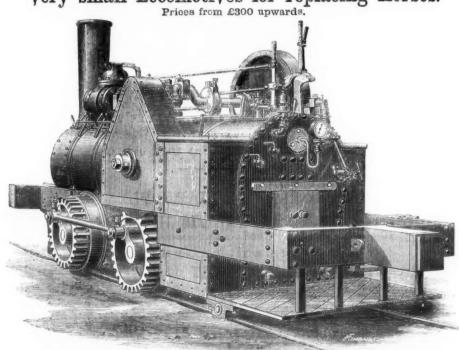
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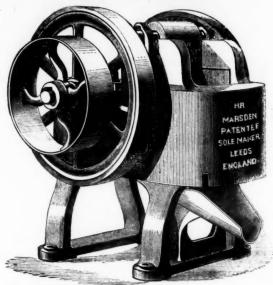
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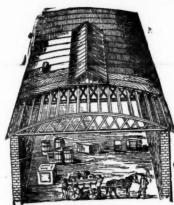
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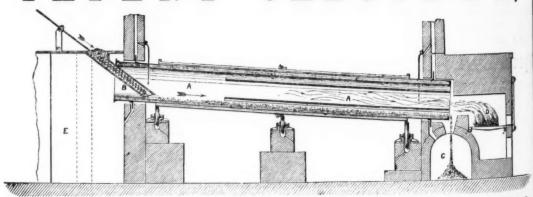
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